THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

Whole Series, Vol. XXXIII. | DETROIT, MICH., OCTOBER 15, 1909. | Third Series. Vol XXV. No. 10.

ORIGINAL COMMUNICATIONS.

THE RELATION OF SOME OF THE RECENT ADVANCES IN CARDIAC PHYSIOLOGY AND PATHOLOGY TO TREATMENT.

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One of the most remarkable facts in the history of medicine is that medical men in innumerable instances have discovered successful methods of treatment many years before scientific research has been able to elucidate the causes and nature of the morbid processes concerned in the manifestation of the disease. Equally remarkable is the manner in which, in recent years, the discovery of the causes of certain diseases has proved that these curative measures go directly to the source of the malady. It might be supposed that most of the methods heretofore based on empiricism would be successful only in that they were able to relieve symptoms, but this is not the case. To-day the practitioner still employs a host of remedies empirically because the pathologist has not been able to discover the cause of the morbid process, but in a considerable number of instances we now know not only that results are achieved but how they ensue. One of these is the use of quinine to destroy the malarial parasite, but we are still on the border of discovering why the salicylates do good in true articular rheumatism and why mercury cures syphilis. Perhaps it may be said that it is now the function of the therapeutist to determine whether the salicylates are destructive to the microörganisms of Poynton and Paine, and if mercury destroys the Spirochæta pallida.

In connection with this line of thought we may well turn to some of the recent work which has been done in regard to the physiology and pathology of the heart, and the bearing of its results upon the treatment of morbid cardiac states. The researches of physiologists, pathologists, and clinicians who have special physiological knowledge are opening new views which we general practitioners must study. In this connection we must bear in mind that the old theory, to wit, that the contractions of the heart originate in the nerve ganglia in its walls, has now been put aside and in its place the myogenic theory, to the effect that the heart muscle originates its own impulses and transmits them by muscle fibres and not by nerves, has been accepted. The nerve ganglia of Bidder, Remak, and Ludwig and the accelerator and vagus nerves are now known to act as a regulating mechanism whereby the function of the heart may be so controlled that the needs of the body and its own needs as well may be adequately met. In other words, the heart may be said to have in itself four inherent functions—the originating of stimuli; the state of irritability or the ability to respond to stimuli; the power of conductivity, whereby the stimulus passes from one part to another; and lastly, contractibility, by the exercise of which function it pumps the blood. Finally, all these functions are controlled by the nervous system in much the same manner, as Fenton says, as the driver con-

trols his horse, which moves automatically yet in response to the owner's needs.

In connection with the subject of the conduction of impulses, without doubt one of the epoch-marking discoveries has been that of His in connection with the auriculo-ventricular bundle of muscle fibers over which the contraction wave, originating at the base of the great veins, passes from the auricle to the ventricle. A knowledge of its existence and its function has explained many hitherto obscure facts in cardiac function, and the beautiful manner in which its fibers are distributed through the ventricular wall has been well shown by the Japanese investigator, Tawara. Under ordinary conditions the contraction wave arises at the point of origin of His's bundle near the orifice of the coronary sinus, and so passes down over the auricular walls across the border-line between them and the ventricles, and so auricular contraction is followed by ventricular contraction in constant sequence. As both the auricular walls and the ventricular walls can, however, originate a contraction wave independently of that which travels along His's fibers, it is quite possible, if the function of these fibers is impaired, for these parts of the heart to no longer act in unison, and so, in that somewhat rare state called Stokes-Adams's disease, the auricular pulsations may be many times more frequent than those of the ventricles. Doubtless a somewhat similar state is present in many cases of profound toxemia, as in the terminal stages of a severe pneumonia. Another fact is that the heart muscle differs from other muscles in this particular, namely, that while the contraction of the latter depends for its degree upon the size of the stimulus in the former case, once a contraction impulse starts, be it great or small, the resulting contraction of the heart muscle is as great as it is capable of at that moment—that is to say, it is a "maximal contraction." In other words, as great a force is exercised as the heart is capable of at that moment. Further, it has been proved that during this period of contraction and immediately afterward the heart is incapable of being driven to greater or renewed effort by extraneous stimulus, and for this reason the period of systole is called the "refractory phase." As soon as systole is over the excitability of the heart muscle begins to be gradually reëstablished, and its restoration is complete just as the next systole is about to begin. Not only is this true, but it would seem to be also true that the power to originate a contraction wave at the origin of His's fibers at the sinoauricular node is also lost once its impulse is spent, and is not recovered in full until just prior to the despatch of the next impulse. When the heart is beating slowly there is ample time for the sinoauricular node to recover its irritability, for His's bundle to recover its conductivity, and for the heart muscle to recover both its irritability and contractility, so that when the impulse is received the systole will be powerful and complete. This explains why it is that a slow pulse is usually full and strong and a rapid pulse small and feeble. It also explains why a rapid and running pulse is regarded with alarm by the clinician, since he recognizes that the heart is not only wasting its energies but getting little time for repair or recuperation. Again it gives us a physiological explanation of one of the means by which digitalis does good in cases of cardiac failure, for by prolonging the period of diastole it permits the heart to recover its irritability so that it readily responds to the impulse traveling from the sinoauricular node. Furthermore, by the rest which it has had its power of contractility is increased, even if it were true that digitalis does not act as a direct stimulant to the muscle itself.

The refractory phase, or the period during systole when the heart refuses to respond to any additional stimulus, has a distinct function to fulfil in that it insures an undisturbed contraction, and the fact that the irritability of the heart is exhausted by each contraction serves also to regulate its action, since another contraction cannot take place until the irritability and contractility are restored, at least in part.

We may pass then to a consideration of

some of the disorders of cardiac rhythm which are met with in practice. The most common type is that in which an extra beat occurs as discovered by auscultation, but in which a full beat seems dropped out if the pulse is taken at the wrist. In other words, in this state, for some unknown cause, the ventricle gives a feeble contraction independently of the impulse which comes over the bundle of His. This extra beat is strong enough to be heard, but often not strong enough to transmit its impact to the wrist. Auscultation may, therefore, reveal many more beats per minute than will palpation of the radial artery, and he who is content to rely solely upon this vessel for his information may be misled into thinking that bradycardia is present. If, however, the extra systole is strong enough to produce an extra beat at the wrist it may cause the pulsus bigeminus, in which an ordinary pulse wave is quickly followed by a small one—that is, the pulse occurs in pairs consisting of a large and small one. After the abortive beat there is usually a long pause, and when the next systole occurs it is usually more full and forcible than normal.

It was supposed at one time that this long pause was due to exhaustion of the ventricle, which required a longer interval for recovery than normal, but it is now considered that this is not the case since it has been proved that the extra systole having developed the refractory phase in the ventricular wall the next impulse which arrives at its proper time or rhythm is unable to cause the ventricle to contract, so that a whole true systole is dropped out, but when the time arrives for the ventricle to receive the next stimulus from the auricle the beat is forcible and full because of the longer period of rest and the fact that the ventricle has had a longer time to fill with blood. That extra systole completely prevents an ordinary systole is shown by the fact that the next full systole occurs at almost exactly the time that should elapse during three beats, the very slight anticipation of the third beat being due to the fact that as the extra systole has not as completely used up the irritability of the ventricle it responds a little more readily than usual to the impulse which comes over the bundle of His.

This condition, called pulsus bigeminus, in which the occurrence of an extra ventricular systole abrogates the next normal cardiac contraction, is to be differentiated from the so-called pulsus alternans, in which, for some reason as yet unknown, each alternate beat occurring in practically normal rhythm is smaller or weaker than it should be.

What then is the clinical significance of these interesting anomalies of cardiac function? Fenton quotes Wenckebach as giving the following classification:

The first class are those in whom nothing can be found in any way to account for the irregularity, and whose lives are in no way affected by their occurrence.

The second are those in whom the irregularity is due to lesions or conditions in other organs, and may be toxic in origin—for instance, diseases of the gastrointestinal tract or the presence of parasites in the intestinal canal. They are found more commonly in slowly than in rapidly acting hearts, and generally disappear during fever. This may be regarded as a favorable sign. On the other hand, where the pulse irregularity persists or comes on for the first time during the febrile attack, the prognosis is serious, more especially in the young.

The third class comprises the aged. The cause is uncertain, but may be due to increasing irritability of the cardiac tissue with advancing life.

The fourth class are those who suffer from definite organic lesion. In these, again, the value of mere pulse irregularity is not certainly defined, and is a doubtful guide to the extent of the damage; conversely, where the damage is known to be great—as in the fatty degeneration of the organ in pernicious anemia—irregularity does not necessarily occur.

To this list I would add as a result of my own experience five other classes, one of which is certainly of great importance: In one adolescence, or that period of life

which Washington described as the time "when the sap begins to run." In the second class the disorder arises from sexual excesses. The third class results from neurasthenia. Closely associated with the class due to diseases which cause toxic effects are those patients who suffer from arrhythmia due to the excessive use of tobacco. Lastly, and these are the important cases, another class is met with in those who are suffering from cardiovascular disease with high arterial tension in whom the heart often misses a beat, or tries to give an extra systole because it is weary, just as a man pushes uphill an overloaded wheelbarrow, half stopping, or completely stopping, every now and then because his task is too severe, and an instant's rest allows him to recuperate.

This is the really dangerous class, because at best it shows that the heart is weary of its struggle or nearly exhausted. It may indicate that the bundle of His, which is truly like the thread of Clotho, Lachesis, and Atropos, is so diseased that impulses cannot be regularly transmitted over it. How often do we see patients well along in years, who have been subjected to nerve and physical strain, complain first of arrhythmia and dyspnea, then after exertion, sooner or later, they fall gasping for breath, and if death does not come at once we find on examination tumultuous cardiac arrhythmia, cyanosis, or pallor, pulselessness at the wrist, but pulsation of the jugulars and all the signs that the auricles and ventricles are dissociated, and that functional cardiac chaos has supplanted the regular function of ordinary existence.

It is at these times that we recognize the futility of therapy, but before the fatal strain, which has been the last straw on the camel's back, we can do much by proper drugs, proper diet, and proper mode of living to avoid catastrophe. Here we can call upon the nitrites and iodides to lower arterial tension, and strophanthus or digitalis or nux vomica to help the heart. Here we must endeavor, not to bring pressure to the normal, but recognize that while the arterial pressure is too high, and must be lowered, it is nevertheless essential to bear in mind that a tension higher than normal is essential if the blood is to be driven through rigid and narrow blood-paths. In many of these cases useful lives can be greatly prolonged, and much physical and mental comfort may be given.

Thirty years ago the study of disease of the vascular system scarcely did more than cover the lesions of the valves of the heart, a consideration of gross lesions in its muscle, and a brief reference to the grave changes found in the blood-vessels when they were affected by marked fibrosis or atheromatous change, or became plugged by emboli or thrombi. Little attention was paid to the changes in the finer arterioles except when these changes were well developed, and nothing was said of the functional state of the arterial system in its relation to circulatory disorders. Nearly all the treatment advised was directed to the heart itself, and the importance of the vasomotor system as a factor in disease was almost ignored. At the present time, however, medical men in general have come to recognize the fact that a vascular system intact, both functionally and anatomically, is essential not only to the health of the body in general but of the heart in particular. Not only may serious consequences to the heart follow the development of arteriocapillary fibrosis, but, in addition, mere spasmodic contractions of the arterioles, to a degree in excess of the normal, may be disastrous in acute conditions. So too the antithesis of spasmodic contraction, namely, vascular relaxation, may result in speedy death, either by bleeding the man into his own vessels, or by causing cardiac exhaustion in the endeavor of this organ to fill the relaxed vessels. The object of these remarks, therefore, is to emphasize the importance of studying the vascular state and the degree of the blood-pressure in respect to the diagnosis, prognosis, and treatment in several states of disease, and they are called forth because a fairly large experience has convinced me that many medical men are still impressed with the idea that a tired heart should be stimulated to greater effort, when in reality it should be given as

much rest as possible by diminishing its burden. I believe that this is one of the grave mistakes in modern diagnosis and treatment.

If we take, as an example, any one of the grave infectious diseases characterized by toxemia, we find that the heart fails, if it fails at all, as a result of poisoning of its muscle or disorder of its nerve supply arising from the same cause, and against this muscle poison our stimulants do not act as true antagonists. The longer I study these cases the more I am impressed with the fact that active cardiac stimulation is often more harmful than advantageous, unless we can resort to measures designed to diminish the toxemia, and by decreasing the toxemia permit the heart to do its work. As a matter of fact, the vascular system in these cases shows, if it be carefully studied, that it is much more responsible for the circulatory depression which is present than is the heart, and an examination of the patient's vessels will reveal the fact that they are widely dilated, and of the heart that it is working more actively and more forcibly than in health in an endeavor to fill the relaxed arterioles. The patient's death is doubtless imminent because of circulatory failure, but the heart in a considerable portion of cases fails only when it is tired out in the vain attempt just alluded to.

To employ a simile which I have used before, the heart under these circumstances may be compared to a locomotive on a slippery track: it fails to push its load not because it is weak but because it finds no resistance on the rails. The more the locomotive is stimulated to increased endeavor by opening the throttle wider and wider, the more it shakes itself to pieces, the more it expends its energy, and it gains nothing. The heart is designed to beat against a very considerable arterial tension, just as the locomotive is required to work against a given load; but here the simile ceases, for the locomotive gathers no strength from the friction or resistance of the rails and train, whereas the heart depends absolutely for its existence upon such resistance, because if the arterial pressure falls the heart muscle gets less blood through its coronary arteries, and through the vessels of Thebeseus. A very low tension, therefore, means an increased but worthless expenditure of energy and a decreased nutritive supply to the overworked muscle fibers. Fortunately most of the drugs commonly used by physicians under these conditions are, as a matter of fact, both cardiac and vascular stimulants, and so the patient gets the needed vascular effect.

It is quite remarkable how competent the heart is to attend to its functions if the physician is able to overcome vascular relaxation. There are only three drugs which have seemed to me to be competent for this purpose, namely, atropine, adrenalin, and digitalis, and I have placed them in their order of usefulness; for atropine by contracting the great vascular areas of the abdomen raises arterial pressure everywhere, and, according to Hedborn, dilates the coronary vessels, and so increases the cardiac blood-supply without directly stimulating the heart muscle to increased endeavor.

Two states of deleterious high tension are also overlooked, namely, the high tension of acute illness and the high tension of prolonged nervous and mental stress. The high tension of cases of acute illness rarely approaches the high tension characteristic of arteriocapillary fibrosis for obvious reasons, and so is not readily recognized by the physician who is careless of this aspect of his patient's case; but, nevertheless, it is important for us to recall that its modification is much more advantageous than the very popular efforts to reduce fever, which is an associated symptom of comparatively little importance. Whether the high tension occurs early in the illness or at a later stage, vascular relaxants, which are not cardiac depressants, will save the heart from the expenditure of a large amount of unnecessary effort, and thereby enable it to withstand calls upon its reserve energy.

I wish to call attention to only two more points in regard to this matter of high arterial tension in acute disease, namely, that

physicians often, in their terror of cardiac failure, give circulatory stimulants when a comparison of the patient's pulse force and tension with that in their own vessels will show that their own circulation, although normal, is at a lower ebb than the patient's. By giving stimulants when fever is already causing excessive cardiac and arterial activity they place themselves in the position of the man who beat his horse into a run for fear he would give out before he got to the end of the journey.

The second point is that our forefathers, while they were empirics, were often more skilful in these cases than many so-called scientific moderns, for they gave vascular relaxants in the form of spirit of nitrous ether, which is, after all, like nitroglycerin in its effects, and Dover's powder, which produces similar influences.

The subject of arterial spasm or fibrosis in its relation to cardiac failure, in those who are subjected to mental strain, is too large a field to be discussed at this time, although it is more important than any of the fields already spoken of. I have recently discussed it at length elsewhere.

To express the matter briefly, we meet with three classes of cases of high arterial tension of this type: (1) Those in which persistently high tension is a result of spasm due to prolonged nervous stress combined with certain abuses as to habits of life, food, and drink. (2) Those in which tension is high because in addition to spasm there is gradually developing, or has already developed, fibroid change in the vessels. (3) Cases in which, after a prolonged period of high tension, there more or less suddenly develops persistent low tension in which the arteries are relaxed and distended, so that to some degree they resemble veins in their caliber and compressibility.

In the first and second classes rest in bed, with massage and the nitrites, is essential. In the third class the rest in bed is needed also, but vascular stimulants are required. In all these cases the iodides are valuable. If the high tension is due chiefly to spasm, nitroglycerin will do good for obvious reasons, but it will fail to a great extent if the condition is due to fibrosis. This is an important therapeutic point, showing that the physician can expect nitroglycerin to reduce only that part of the hypertension which is due to spasm, and not that part due to fibroid change. The latter stage is largely beyond the influence of medicinal agents, unless it be the iodides. On the other hand, the combined effect of rest, massage, and iodides will often, even when fibrosis is well developed, not only produce excellent results, in that the state of a tired heart is improved, but also result in a marked diminution of arterial tension, partly by a cardiac and partly by a vascular influence.

There is still another class of cases in which high arterial tension is present which deserves notice, namely, those persons of somewhat advanced years who have gradually developed a high tension of moderate degree, and to this tension the heart, vessels, and tissues have become adjusted, so that it has become a "standard tension," so to speak. With the onset of an acute illness the physician may find this standard tension somewhat exaggerated, and, impressed with the general principle that a high tension is evil, he proceeds to lower it to normal instead of to the new normal standard of the individual under observation. This is usually unwise, and each patient must be studied carefully in this respect.

Finally, let me sum up the points which I am desirous of presenting to the clinician:

1. Cardiovascular stimulants are often given when vascular relaxants are really needed.

2. More attention to the protection of the heart from unnecessary labor is advisable.

3. If the physician will direct his treatment to the vessels the heart will often be able to care for itself.

4. Do not stimulate a heart to increased effort when the real object is to decrease its burden and to diminish the toxemia which is destroying its function.

THE TREATMENT OF INTERSTITIAL KERATITIS.

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In considering the treatment of interstitial keratitis it is well to recall to mind the simple fact that the progressive stage is of long duration, and that it is, therefore, essential to get the confidence of the patient. The prognosis as to ultimate recovery being good, it is advisable to promise the patient a complete restoration of vision with the understanding that it will take from six to twelve months to effect a permanent cure. The patient must be informed of the usual course of the disease and the exacerbations thereof, and of the necessity of a systematic course of treatment in order to restore the visual acuity, which because of the excessive infiltration of the corneal stroma has been reduced to a minimum.

The disease from the therapeutic aspect may be divided into two distinct periods—*i.e.*, the progressive, until the acme has been reached, and the retrogressive, or period of decline, until complete restoration of the visual function has been obtained.

The various therapeutic measures employed in the treatment of this condition in its many stages must have the following objects in view:

1. To ameliorate the symptoms of irritation and keep the patient in a state of comparative comfort.

2. To combat the inflammatory processes by the application of antiphlogistic measures.

3. To shorten as far as possible the course of the disease.

4. To prevent complications.

5. To remove the cause, which is always of a constitutional nature.

6. To restore the transparency of the cornea and the other refractive media to a normal condition.

7. To prevent recurrences.

The disease being of long duration even under a most judicious treatment, our primary object should be to place the patient under the most favorable hygienic surroundings so as to minimize his inconvenience. The photophobia is, of course, the most annoying symptom requiring immediate attention. No one single measure will give relief to this annoyance. During the period of progression the treatment must consist both of local applications and internal administration of therapeutic measures calculated to accomplish the desired effect. The eyes must be protected from light by smoked glasses. Children suffering from this form of keratitis, even in cases of unilateral inflammation, must be kept out of school and in the open air when possible; the diet should be well nourishing; a daily bath should be given to improve the circulation, invigorate the nervous system, and to build up the constitution and increase its resisting power so as to enable it to combat the inflammatory process and shorten the course of the disease. A mild antiseptic lotion should be employed several times daily to keep the eyes perfectly clean. It should contain no irritating substance such as zinc. A simple boric acid solution I think to be the most rational eye lotion for cleansing purposes:

℞ Acidi borici, gr. xl;
Aquæ destillatæ, f℥iij.
Sig.: Bathe affected eye t. i. d.

Occasionally the addition of cocaine to this solution is very valuable in lessening the irritation and minimizing the photophobia.

℞ Cocainæ hydrochloridi, gr. v;
Acidi borici, gr. xl;
Aquæ destillatæ, f℥iij.

The cocaine should not, however, be employed for a very long time as a matter of routine practice, as it has a deleterious effect upon the corneal epithelium when long continued. Suprarenal extract often

acts very favorably to reduce the photophobia:

Adrenalin chloride sol., 1:3000, f3ij.
Sig.: One drop in eye t. i. d.

A rather soothing measure to overcome the marked photophobia is to be found in the application of warm moist compresses. They should be employed several times daily during the progressive stage of the disease, by the intermittent method, or if necessary in continuous form, depending upon the degree of the irritation. This simple therapeutic agent tends not only to ameliorate the irritative symptoms, but has a tendency to hasten the retrogressive stage and thus shorten decidedly the process of the disease.

As in all other forms of keratitis, atropine is, of course, the remedy *par excellence* to combat the inflammatory process, and should be used during the entire course of the disease, until all symptoms of inflammation subside. Rarely is there a contraindication of this drug in this form of keratitis. Its withdrawal for a time can only be justified by marked constitutional symptoms as a result of a poisonous effect. Whenever for such reason atropine is withdrawn scopolamine may be substituted:

Scopolaminæ hydrobromidi, gr. ¼;
Aquæ destillatæ, f3ij.
Sig.: One drop in the affected eye three times daily.

Next in importance, as far as the application of local measures is concerned, is the use of dionin. This morphine derivative has a very favorable action in lessening the photophobia and reducing the pain, and thus by removing or ameliorating the irritative symptoms it tends to combat the inflammatory process. There is no contraindication to this drug. Dionin should be used during the entire course of the disease in both the progressive and retrogressive periods: in the progressive stage for its antiphlogistic and analgesic properties, and in the retrogressive stage for its absorbent effect in aiding to remove the cellular infiltration and restoring the transparency of the cornea. Usually a four-per-cent solution is employed:

Ethyl-morphine-hydrochloride sol., 4%, 3ij
Sig.: One drop in affected eye t. i. d.

Atropine may also be combined with the dionin:

Atropinæ sulph., gr. j;
Ethyl-morphine-hydrochloride, gr. v;
Aquæ destillatæ, f3ij.
Sig.: One drop in the affected eye t. i. d.

Occasionally a four-per-cent solution of dionin gives rise to edema of the conjunctiva and the lids. This does not, however, constitute a contraindication for its use. I find that usually after two or three days the tissues accustom themselves to its use and the edema promptly disappears. Sometimes it may be necessary to reduce the strength to a two-per-cent solution.

Atropine combined with dionin serves also as an important agent to prevent complications in the iris, and when the iris is already involved it will guard against the formation of posterior synechia.

Interstitial keratitis is a manifestation of some constitutional disorder, and therefore the local treatment alone, while of great value, will not cure nor even shorten the process of the disease. Syphilis is often the cause of this form of corneal inflammation. A very small percentage of cases have been attributed to other causes, such as tuberculosis, and to what Dr. Risley terms diseases of nutrition. I am, however, still a firm believer in the specific factor in the etiology of this disease, the uniformity of the symptoms and pathological changes warranting a belief in a common causation. Risley reports two cases (*Ophthalmic Record*, July, 1908) treated successfully with thyroid extract that did not yield to mercury, and in which syphilis was excluded as the causal element. It is of interest to note, however, that in one of the cases some years later there occurred an interstitial keratitis that did not yield to thyroid, but recovered under mercurial treatment. Until further evidence is produced we shall still consider interstitial

keratitis of syphilitic origin perhaps in the first, second, or even in the third generation, in which cases we are inclined to accept the term of Risley, "diseases of nutrition," by merely adding that the nutritional disease is due to hereditary syphilis.

The constitutional treatment is of the utmost importance, and of course mercury is still the drug *par excellence* and should be employed during the progressive stage of the disease. The best method of employing this drug is still by inunction. The dose must be regulated according to the age of the patient. In young children of about six years 15 grains of the mercurial ointment should be rubbed into the skin every evening. This should be continued during the progressive stage until some signs of mercurialism are noticed, when the dose should be reduced or the drug entirely withdrawn. In older children half a drachm, and in adults a drachm, of the ointment may be used daily. During the progressive stage iodides as an absorbent should not be employed. When the mercury is to be withdrawn on account of some ill effect tonics should be employed. During the winter months cod-liver oil should be given. When the oil is contraindicated, or not well borne, iron preparations should be used. The following tonic I find very useful under such circumstances:

℞ Syrupus ferri iodidi, ℥ij;
Liquor potassii arsenitis, gr. xxiv;
Syrupus acidi hydriodici, ℥iv;
Syrupus hypophosphiti comp., ℥ss;
Essencæ pepsinæ, f℥iij.

M. S.: Teaspoonful three times a day after meals.

The bowels should be kept in proper working order. In the beginning of the disease fractional doses of calomel should be given daily; later, when mercury has to be withdrawn, a few drops of cascara at night is a useful adjunct. The patient should live under strict hygienic conditions. Outdoor life is essential. The diet should be mild and nutritious. The eyes should be protected against direct light by means of smoked glasses. Bathing should be religiously practiced daily to stimulate the vital powers of the body. In the declining stage of the disease potassium iodide should be used; the dose must be regulated according to the age of the patient. Drugs are essential, of course, in the treatment of this disease, but the general hygienic precaution will do much to cut short its duration. The statement of Fuchs that "unfortunately we must say that in general treatment is pretty nearly powerless against this disease" is not in accord with the experiences of men in our country. The prevention of complications, the shortening of the course of the disease, the reëstablishment of the corneal transparency are certainly accomplished by careful treatment.

In all cases of interstitial keratitis in the progressive stage mercury should be first given. To try thyroids or any other drug is, I believe, a means of prolonging the disease. It must be remembered also that mercury in one form is not always effective, so that its administration in various forms should be tried.

During the declining or retrogressive stage of the disease our efforts must concentrate toward the clearing up of the corneal infiltration so as to reëstablish the corneal transparency. This is best accomplished by local application. Dionin is very useful for this purpose and should be given in the form of an ointment with massage.

Ethyl-morphine-hydrochloride, gr. j;
Atropinæ sulphatis, gr. j;
Ung. petrolati, ℥ij.

Apply locally within the conjunctival sac with gentle massage.

Calomel may also be incorporated into the ointment, and is a good drug to alternate with the dionin.

Where the drug is irritating holocaine may be added:

Ethyl-morphine-hydrochloride, gr. j;
Atropinæ sulphatis, gr. j;
Holocainæ, gr. j;
Ung. petrolati, ℥ij.

The local application in the form of ointment and massage is very useful in the so-

called cold interstitial keratitis where no inflammatory symptoms accompany the disease. Occasionally it is necessary to have recourse to surgical methods such as paracentesis of the cornea or to iridectomy. Surgical treatment very often hastens recovery, reducing considerably the duration of the disease. It should not, however, be employed unless special indication for it exists, as when the medical treatment is of little avail. The disease is apt to recur even under the best conditions, and exacerbations may set in under the best and most careful methods of treatment. Yet a rigid hygienic régime, a good nutritious diet, daily bathing to stimulate the body functions, with prolonged treatment, even after the symptoms have subsided, will aid us greatly in the prevention of recurrences and in the restoration of the corneal transparency which is essential for the proper performance of the visual function.

OVERDOSAGE IN THE TREATMENT OF TUBERCULOSIS.

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The title of this paper is to be taken in a rather broad sense, as will be apparent.

1. First of all, it is to be seriously questioned whether, at present, the use of any germ product in tuberculosis is not an overdosage. Tuberculosis in its natural progress is not self-limited; if recovery occurs it is due, so far as we can judge, to the stamping out of an infection by the various resisting agencies of the body, perhaps assisted by medication, as it undoubtedly is by rational medical management along hygienic lines. If recovery ensues, the patient manifests no immunity against a reinfection or a lighting up of a latent focus of disease, although he is better prepared to resist infection by reason of his increased strength and education along hygienic lines.

These facts lead to a doubt whether it will ever be possible, by any method, to prepare from the tubercle bacillus a substance which shall be either prophylactic or curative. At any rate, the problem is entirely different from that of any semelincident disease, a mild attack of which—or a severe one if recovery ensues—insures lifelong immunity, barring a small proportionate chance of failure. The problem is also different from that best exemplified by diphtheria, in which the disease, though not semelincident, does tend to self-limitation.

There are certain reports by high authorities to indicate that bacterial products may produce some degree of immunization; but not to mention the possibility of personal bias, careful reading of these reports does not show a very definite, practical result, and the general profession, after nearly twenty years' opportunity to employ some form of tuberculin, and with every incentive to depart from older methods, has not been able to achieve cures along this line. Quite recently various modifications of the tuberculin-diagnostic test have demonstrated the possible danger of repeated doses and the unfortunate fact that simply as diagnostic measures these tests involve fallacies in both positive and negative directions.

This is not intended as a wholesale condemnation of the attempt to prevent or cure tuberculosis by germ products, but as an expression, first, of certain lacks of analogy to vaccinia, the antitoxic treatment of diphtheria, and the less established methods of combating typhoid, pneumonia, hydrophobia, tetanus, and streptococcic infection; and secondly, of the belief that from the immediate practical standpoint such methods should not be used against tuberculosis.

2. General antiseptic measures. Not one of the drugs suggested has proved efficient, and the writer would caution against the

routine, long-continued administration of guaiacol, arsenic, or any similar drug. The external use of colloid silver by Crédé ointment has not, so far as observed, produced harm, and in a few cases it has seemed to the writer that it has been of decided benefit—at any rate, the characteristic hypoleucocytosis has yielded. Nor would the writer condemn the reasonable, careful use of arsenic, salicylates, or other drugs of this nature, short of toxic danger, although such methods must be considered as rather theoretic and very far from producing unmistakable results.

3. Expectorants, sprays, etc. It is unnecessary in this age of the world to argue against the Bellevue cough mixture or similar narcotic cough mixtures, although they may be used merely as means of securing euthanasia in absolutely hopeless and far-advanced cases. For many years the writer refused cases of consumption, etc., but lately some unexpectedly good results amounting almost to cures, in cases undertaken at the urgent request of members of the family, and with the proviso that they should be treated along purely nutritive lines, have led to the query whether, quite apart from the hygienic treatment, we should not apply, in modified degree, the principle of letting the diseased organ alone, as we have long done in the case of the kidney, and to some extent in the case of the heart. The influence of most of the vegetable expectorants on the digestive organs is irritating and tends to depress nutrition.

There is obviously no objection to using simple oily sprays to soothe the upper air-passages, but the use of most volatile substances, supposed to act antiseptically or to heal deeply-situated mucous membranes, is open to serious question. Neither should we absolutely condemn all well-established measures for treating the bronchitis, pneumonia, pleurisy, etc., which, severally or united, make up the pathology of most cases of phthisis. But the general principle should be clearly enunciated that tuberculosis is essentially a general infection, and that we should no more focus our therapy on the local conditions in the respiratory organs—or, indeed, other organs—than we would upon the eruption in variola or the intestinal ulcers in typhoid.

4. General medication. It may be an overstatement, but it is a safe one, that there is no such thing as a tonic or an alterative. These conceptions deserve to go with that of a "cordial" or of a "crisis" in the medical lore of novel writers. Nothing can satisfactorily "tone up" the system except food, and food that is assimilated. The fact that an article is listed in the Pharmacopœia does not exclude it from the category of foods. Iron, for example, even in inorganic form, may under proper conditions be assimilated, although as a matter of experience the writer has come more and more strongly to the conviction that meat, spinach and a few other vegetables are almost the only preparations of iron needed.

Caffeine and strychnine probably come the nearest to being "tonics," in the old-fashioned sense, of any drugs that we possess, and there are occasions when we need them in tuberculosis, just as we may need digitalis or other essentially cardiac stimulants. But it should be thoroughly understood that the mere diagnosis of tuberculosis, or even the existence of a moderate depression of strength, does not indicate the routine administration of a "tonic."

Not only in tuberculosis but in general cases the use of medicinal hypnotics, anodynes, and other drugs acting markedly on the nervous system is of doubtful propriety. Whatever may be said of their use in transient distress, they are certainly to be avoided in every chronic condition in which the day of reckoning must be met without recuperation of the patient's resources. Local heat or cold, friction, psychotherapy, etc., or even an inculcation of the necessity of stoicism, are far superior.

One of the wickedest drugs used in tuberculosis is an iodide. In many instances it actually increases the breaking

down of tuberculous tissues, and thus not only locally increases the lesion but liberates toxins. The only preparations of iodine to be admitted into the armamentarium for tuberculosis are the various extracts of thyroid, and then only on account of definite indications.

The principle must be firmly grasped that palliative measures and drug tinkering are out of place in tuberculosis.

5. Nourishment. In addition to the obvious indication for nourishment, consumption has been shown to be a term of literal applicability in the sense that an abnormally high ratio of oxygen is used. As often laid out, the diet of the tuberculous patient is an illustration of overdosage in the strictest sense. Whether this is due to an extension to the tubercle bacillus of the old notion that a tapeworm consumed the nutriments within the alimentary canal, or whether it is merely an expression of the general fallacy that if a little is good, much is better, or whether it is a reflection of the lay idea that one can store up strength by overeating, as one can lay aside money in a bank, we need not pause to consider. The tuberculous patient needs about 10 per cent more of assimilated nutriment than the non-tuberculous person similarly circumstanced. In view of the now established rule that the former needs rest in the open air rather than active exercise, he does not usually require any excess over the ordinary standard ration. If emaciated, he of course requires a moderate surplus, though it is time to abandon the childlike faith in increase of weight as an index of recovery, which the advocates of one system after another have manifested.

Overdosage of food may distend the stomach too much at one time, or it may produce fatigue by the frequency of meals. As a rule the patient should have three square meals a day with one or two light lunches, though if in a febrile state and virtually representing a severe case of bronchitis or pneumonia, he may require about six feedings a day, with appropriate liquid or semiliquid nourishment. As to spoonful doses of food and hourly feedings, in any condition, the writer has elsewhere expressed himself.

Overdosage is often practiced in a particular sense in tuberculosis, from the feeling that the patient must have some peculiar diet different from that in health. In this case overdosage of one nutriment is likely to be associated with underdosage of some other. It is a matter of arithmetic to show that, on a milk diet, an adult cannot possibly get enough carbohydrate without getting too much fat and proteid, that he cannot get enough organic nutriment of all kinds without too much water, and that he will develop anemia from iron starvation anyhow. We can make bricks without straw, but we cannot nourish properly with eggs, which contain no appreciable amount of carbohydrate. We use hard-boiled egg-white as a test for peptic power and find it very easily digested in a test-tube in the incubator, but too many physicians consider it "indigestible" in the stomach. In preparing a chart for urinary analysis we mention the albuminuria of exogenic nature due to the ingestion and absorption, unchanged, of raw egg-albumin, but when it comes to a practical question of diet too many of us insist on the patient taking his eggs raw.

We know that alcohol can be oxidized in the body only to a small amount, say 30 grammes in a day, furnishing not much over 200 calories, or from a tenth to a twelfth of the amount needed; we know that it reduces arterial tension, and never acts as a stimulant except indirectly in this way; we know that when it exceeds 3 per cent of the stomach contents it has passed its optimum even as a transient stimulant of secretion; yet too often we give an overdose in practice. Occasionally one does encounter a case in which the patient has been cured of tuberculosis by being made a drunkard. Perhaps such cures are due to the idleness and lack of mental stress which the alcohol produces. But for every such case we find several in which the alco-

hol increases the rapidity of the tuberculous process.

Barring febrile cases, which require for the time being much the same diet as typhoid, and cases with distinct digestive lesions or alterations of function, which require appropriate treatment, dietetic and otherwise, the tuberculous patient needs just about the same diet range as a person in health. He cannot afford to waste his digestive strength on innutritious vegetables like cabbage, onions, turnips, etc.; his appetite must be tempted by well-cooked and daintily served food; he cannot afford any of the dietetic indiscretions which the hearty person risks with impunity in most instances, but he will thrive best on ordinary foodstuffs, well assorted.

There is nothing in the physiology of the tuberculous patient which vitiates the general physiologic fact that, considered as an engine, about two-thirds of our calories must be derived from the oxidation of carbohydrates, nor that enables him to assimilate doses of fat and oil that act as cathartics in well persons. It is an empiric fact that lithemic persons do not often contract tuberculosis, but we do not understand the condition well enough to be sure that we can combat tuberculosis by giving an excess of nitrogenous matter. In particular, we do not know whether, if we should give any great excess, it should be in the form of out-and-out excrementitious matter like urea and uric acid, or as purin bases, or as nuclein, etc. Until we have a better conception of the chemistry of the patient and the tubercle bacillus, it is wise not to attempt to drown the latter in oil nor to feed the fires of the body by throwing in ashes, nor to ride any other hobby.

6. Rest. There are a few precautions to be taken to avoid an overdose of this excellent remedy. The patient should not be unduly discouraged by feeling that every little movement or mental activity is beyond his strength, nor led to too much introspection by enforced idleness. Perhaps, too, from the ethical standpoint, he might as well die of tuberculosis as live with a firmly established habit of idleness and selfishness.

7. Climate. Within the writer's recollection, professional ideas as to the preferred climate have changed from Florida (rather damp, low altitude, warm) to Colorado or Arizona (dry, high altitude, rather warm) and to the Adirondacks (fairly dry, high altitude, cool to cold). An impartial review of experience seems to show that the main features are absence of dust, especially of an irritating nature, as that from coal, soot, and stone, or metal, and absence of sudden changes of humidity and temperature. The problem cannot be considered solved with regard to barometric pressure.

The writer has cured tuberculosis in Buffalo, or rather seen it recover under guidance, and probably any climate will suffice if the other conditions are fairly favorable. It is certainly a mistake to impoverish and worry a patient or to drive him into the agonies of nostalgia by insisting on a change of climate.

8. Fresh air. With due allowance for light and drafts, it is not obvious *a priori* why an enclosed veranda is necessarily superior to a well-ventilated bedroom. Again, unless it can be shown that the constant nasal (not buccal) breathing of cold air has some direct effect on the bacillus or indirect effect on the tissues or leucocytes, it seems questionable whether the artificial conservation of the bodily heat by clothing and rugs is superior to an artificially warmed but pure atmosphere. It must also be questioned whether the almost total suppression of perspiration and dermal exhalation is advisable. The term overdosage is particularly applicable to the insistence on continuous outdoor or practically outdoor life, without regard to wind, rain, and excessive cold. Why exposures which a healthy individual would avoid should be necessary for the consumptive is difficult to understand.

THE METHODS EMPLOYED FOR THE RELIEF OF ORGANIC STRICTURE OF THE URETHRA IN THE GENITO-URINARY SURGICAL DEPARTMENT OF THE JEFFERSON HOSPITAL.

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(Continued from page 617.)

Divulsion.—This mode of treatment was introduced some years ago by Holt, and while frequently mechanically successful, was attended with so many complications and so large a mortality that it has become obsolete.

The various other methods of treatment, such as rapid dilatation, tunnelization, forced catheterism, and the like are properly regarded as unscientific, uncertain, and dangerous by most surgeons.

Internal Urethrotomy.—This operation is indicated in strictures of either large or small caliber, situated in any portion of the urethra from the meatus down to the bulbomembranous junction, which are either resilient or irritable, and are therefore unsuitable for treatment by gradual dilatation. As the two forms of stricture just mentioned are of rare occurrence, internal urethrotomy is but seldom required. To this one exception may be noted, namely, in the case of strictures within the first one and one-half inches of the canal: these are better treated by incision than by dilatation, as the latter causes pain and is likely to be followed by inflammatory reaction, and rapid recontraction. It is still a mooted point whether a stricture should be incised on the floor or on the roof of the canal. I have adopted a routine method of operating in such cases that has given the most gratifying results. A stricture of large caliber situated anywhere from the meatus to the bulb and requiring urethrotomy is divided on the floor of the canal. Strictures of small caliber are incised on the roof of the urethra with the exception of those situated at the bulbomembranous junction or in the membranous portion of the urethra, when the incision is preferably made in the inferior wall of the canal, thus diminishing the danger of causing a severe or even a fatal hemorrhage as the result of wounding the dorsal vein or the plexus of Santorini, an accident that has occurred in quite a number of cases in which the constriction was divided on the roof.

Very resilient strictures, especially if traumatic in origin, belong to a type in which internal urethrotomy or any other method of treatment is frequently unsatisfactory. In such cases a urethrotomy may have to be repeated several times before a permanent result is attained, and even then recontraction is likely to take place. These cases require constant care and repeated dilatation during the remainder of the patient's life.

In preparing the patient for any of the various forms of urethrotomy the field of operation, as well as the instruments, should be rendered sterile, after the manner described under rapid modified dilatation. As soon as the operation is completed the urethra is irrigated with a hot sterilized normal salt solution, which is usually sufficient to control the trifling hemorrhage that results from the incision. If the hemorrhage following division of stricture within the first two inches of the urethra is profuse, it may be controlled by packing the urethra with a roll of absorbent cotton that has been moistened with a 1:1000 adrenalin solution, and making compression on the wound in the urethra by applying a narrow bandage to the organ. In the course of a few hours the urethral compress should be removed and a soft-rubber catheter inserted and fastened in place. If the bleeding is due to division of a stricture situated further back in the penile urethra, one drachm of adrenalin solution 1:2000 should be injected into the urethra and retained in the canal for five minutes, after which the rubber catheter should be introduced and the penis

wrapped in gauze, firm pressure being made upon the urethra by means of a narrow gauze bandage. When the blood comes from the deep urethra and cannot be controlled by means of the catheter and pressure, the flow may be temporarily checked by making digital compression of the perineum. The best method for effecting this is to place a large compress on the perineum, put the arm-piece of the crutch on the compress, the ferrule being braced by the foot-board of the bed, which should be elevated so that direct pressure will be brought to bear on the perineum. If the dorsal vein or plexus of Santorini has been wounded, no time should be lost through temporizing, but an incision should be made in the perineum, and the bleeding vessel secured. If this is found to be impracticable, the scrotum should be divided in the median line and the testicles separated and pushed one on each side of the incision, thus giving access to the urethra from in front of the bulb well down on the membranous urethra. The urethra should then be opened on the floor, and the bleeding point secured by either a ligature or a purse-string suture. After performing urethrotomy, except when the stricture is within the first inch of the urethra, continuous drainage should be maintained by means of the catheter for from one to four days, the length of time depending on the character, location, extent of the operation, and the amount of hemorrhage that followed the operation.

The after-treatment of these cases consists in curing the local lesions causing the chronic urethritis, and performing continuous dilatation by means of the introduction of a full-sized metal bougie twice a week for a period of months.

Internal Urethrotomy for Strictures of Large Caliber.—In operating upon strictures of this description the incision is made upon the floor or the canal from behind forward. When the operation is done for the relief of strictures of the meatus or of those situated in the navicular portion of the urethra, local anesthesia may be employed, one drachm of a two-per-cent solution of cocaine being injected into the canal and allowed to remain for five minutes. The instruments required are a slightly curved, blunt-pointed tenotome; bulbous metal bougies, and a soft-rubber catheter.

The knife is introduced into the urethra with the cutting edge turned toward the floor of the canal. After the blade has been passed behind the obstruction for about one-fourth of an inch, the incision is made directly in the median line on the inferior wall, and should be of sufficient length and depth to divide all constricting bands, so that after the operation a bougie at least two sizes larger than the normal caliber of the patient's urethra can be readily introduced. This is done to allow for a certain amount of recontraction that inevitably occurs after the wound has healed. The meatus must be enlarged, if necessary, after the operation has been completed, and the passage of a bulbous bougie shows that the canal is free from obstruction. It should be irrigated with hot normal salt solution, and a soft-rubber catheter inserted and allowed to remain *in situ* for two days.

When the strictures are situated further back, in the penile urethra, especially designed urethrotomes are necessary in order to perform urethrotomy. Of the many different forms of this instrument that have been devised, only two have been employed by me: one, which is known as the Gross urethrotome, being a modification of Civial's instrument; and the other being the dilating urethrotome of Otis. In operating upon strictures of large caliber with these instruments, the incision is made upon the floor of the canal from behind forward.

The Gross instrument is reserved for strictures that are either resilient or irritable, of comparatively recent origin, and not extensively organized, or where the constriction assumes the form of a band or a bridle. The advantage of the Gross urethrotome is that the bulbous extremity permits the location of the stricture to be definitely determined without withdrawing the instrument. It can, however, be employed only in those cases in which the coarctation will permit of a certain amount

of dilatation, as the circumference of the bulb measures 23 mm. In performing internal urethrectomy with the aid of this instrument anesthesia may be induced by means of nitrous oxide gas. The urethrotome is introduced into the urethra and passed gently down until the obstruction is reached, when the bulbous extremity is insinuated through the contracted portion of the canal and carried onward until it has reached a point at least one-half inch beyond it. By means of the mechanism of the handle the knife is made to protrude from its sheath, and the incision is made on the floor of the urethra by pressing the blade firmly against the urethral tissue and drawing it forward until all sense of resistance is overcome, thus making a clean incision behind and then directly through the constricted portion of the urethra to about the same distance in front of the obstruction, after which the urethra is irrigated and the soft-rubber catheter passed; the latter should be removed on the fourth day.

The Otis urethrotome is employed in operations upon strictures situated in the anterior urethra that are resilient, irritable, nodular, or fibrous, well organized, and that involve the submucous structure. It is also used to complete the operations in cases of stricture of small caliber in which the preliminary incision was made by a Maisonneuve urethrotome. As the caliber of the dilating urethrotome is 18 mm., the stricture must have this caliber before the instrument can be introduced in such cases, therefore a preliminary dilatation or incision of the obstruction with an instrument specially designed for cutting strictures of small caliber must first be made. The inventor of this instrument directed that after its introduction into the urethra the canal should be overdistended and the knife-blade drawn through the constricted portion of the canal, which thus severed deeply not only the fibrous structure that composed the coarctation, but healthy tissue as well. It was soon discovered that this technique resulted, in many instances, in the production of an incurvation of the penis, causing physical disability that might persist for months or even throughout life, giving rise to great anxiety and mental distress, a result that did much to bring this method of operation into disrepute. After an unsatisfactory experience I soon learned that if, after the instrument was in place, the blades were separated just sufficiently to fill the constricted portion of the canal comfortably without causing overdistention, so that the strictured portion was rendered fixed, and presented a firm, unyielding surface to the passage of the knife, the fibrous structure forming the coarctation would alone be divided, and the patient would convalesce without the development of the untoward consequences that result if the technique suggested by the inventor of the instrument were employed. Since adopting this modification I have learned to regard this instrument as one of the most satisfactory and reliable to use for the relief of cases of the kind under consideration. Some writers advocate that when performing this operation the incision be made on the roof of the canal. My experience coincides with that of Bryson, who maintained that the "stricture disease" chiefly affected the floor, and that for this reason the inferior wall was the best site for the incision. Moreover, when the stricture is cut on the roof there is more danger of hemorrhage, that may be followed later on by the development of incurvation of the penis.

Before the operation is performed it is essential to know the depth of the stricture from the meatus and the normal caliber of the patient's urethra, which latter should be determined by means of the urethrometer.

The dilating urethrotome is introduced into the urethra with the groove along which the knife-blade travels presenting toward the floor of the canal; it is carried down until it is passed slightly beyond the seat of obstruction. By means of a wheel connected with the handle the blades are separated until the constricted portion of the canal firmly grasps the dilated shaft of the instrument without causing overdistention. The knife is then drawn directly along the median line, through the cicatricial mass, until it is completely severed. The

blade is then returned to its sheath, and the instrument withdrawn. The urethra is next explored by means of a full-sized bougie à boule, and if any constricting bands are discovered, they should be incised in the same manner, after which the urethra should be irrigated and a full-sized soft-rubber catheter inserted.

Internal Urethrotomy for Strictures of Small Caliber.—Strictures in the penile urethra whose caliber is less than 15 mm. must first be dilated, by either continuous or gradual dilatation, before it is possible to insert the instrument for performing urethrotomy.

When the obstruction can be permeated by a filiform bougie, but is so constricted and tortuous that no other instrument can be inserted, internal urethrotomy may be successfully performed by means of a knife designed by me for the purpose. The instrument consists of a staff ten inches long, having a handle at one end and terminating in a triangular blade at the other, the apex of the blade being blunt. On the under surface of the shaft that carries the knife is a ring through which a filiform may be threaded, serving to guide the instrument in its passage along the urethra. In performing this operation the penis must be steadied during the progress of the knife along the canal; this is accomplished by putting the organ on the stretch. The filiform is now threaded through the ring at the end of the instrument, and passed along the whalebone into the urethra with the blade presenting toward the inferior wall, until the obstruction is reached, when, by gradual but firm pressure, the knife is made to incise the cicatricial mass from before backward, directly in the median line. The division of the coarctation permits the introduction of a Thompson dilator, and the caliber is further increased up to 18 mm., after which the instrument is removed and the urethrotome of Gross or of Otis is employed to divide the remaining constricting bands, thus restoring the canal to its normal caliber.

Urethrotomy in Impermeable Stricture of the Anterior Urethra.—Occasionally cases are encountered in which the urethra is either partially or completely occluded from the meatus down to the bulb. Such cases are often complicated by coincident penile urethral fistulas. In attempting to relieve this form of obstruction I have employed the following method of operating with the most gratifying results: The penis is held firmly by being stretched upward toward the pubic bone. A narrow bistoury, four inches long, is then inserted into the meatus and carried steadily downward and onward through the cicatricial tissue along the course of the urethra until the end of the obstruction is reached. The incision along the almost obliterated urethral tract cuts a groove in the course of the canal, which is usually attended by trifling hemorrhage and permits the passage of the Thompson dilator, by means of which the canal can be stretched sufficiently to allow the Otis urethrotome to be employed, dilating and cutting until the normal caliber of the canal is restored, after which a grooved urethral staff is passed and external perineal urethrotomy performed by means of a guide. The sinus in the penis is opened, curetted, and finally a full-sized soft-rubber catheter is passed through the urethra to the bladder and fastened in place. Continuous drainage is maintained for at least four weeks. The perineal wound is packed lightly with iodoform gauze, which is removed on the second day and not replaced.

The results obtained by this method of treatment in apparently hopeless cases have been almost phenomenal.

For the division of stricture in the penile urethra some advocate the employment of a urethrotome similar to that of Maisonneuve, but the method just described is, in my judgment, to be preferred.

Internal Urethrotomy for Strictures of Small Caliber in the Deep Urethra.—Different forms of urethrotomes, all embodying the same principles, have been devised for the purpose of severing, from before backward, tight strictures which are found in the region of the bulbous or membranous portion of the urethra. The most popular of these are the Maisonneuve and Treevan instruments. With the former the incision

is made on the roof, and with the latter on the floor, of the canal. Before such instruments can be introduced the caliber of the stricture must be dilated to 9 mm.; if this can be accomplished, in an ordinary stricture, internal urethrotomy will be unnecessary, for such cases can be relieved more satisfactorily by either gradual or modified rapid dilatation. When a deep-seated stricture is resilient or irritable, the only method of treatment consists in performing urethrotomy. In such cases I have abandoned the use of the aforenamed instruments in the performance of internal urethrotomy, for this method of operating, even in the most skilful hands, is attended by a mortality of four per cent. The complications most often observed are extravasation or suppression of urine, uremia, urinary fever, and in not a few instances fatal hemorrhage from wounding of the dorsal vein, the plexus of Santorini, or the artery of the bulb. The method of Maisonneuve has been modified, and on trial has been found to be more satisfactory than the original technique, giving better results and being attended by comparatively few complications and less risk than accompanied the older method of operating. If the stricture is filiform in caliber but capable of being stretched, continuous dilatation by means of a whalebone bougie is first performed, the instrument being allowed to remain in the urethra for three days; after this modified rapid dilatation is performed, so as to permit the introduction of a grooved urethral staff, and an external perineal urethrotomy is performed by means of a guide. As soon as this part of the operation has been completed, any remaining obstruction is incised on the floor of the canal by means of the Otis urethrotome, being careful not to overdistend the urethra while making the incision, thus avoiding incising anything but the cicatricial tissue. The final steps of the operation consist in irrigating the urethra and introducing a full-sized rubber catheter, which is allowed to remain *in situ* until the opening in the membranous urethra has closed. Continuous drainage prevents urinary fever, relaxes muscular spasm, puts the parts at physiologic rest, causing atrophy and absorption of the strictured tissue, and assures healing without the danger of ensuing perineal fistula. The catheter should be removed about every three days and a clean instrument reintroduced. If continuous catheterism is employed, it is not necessary to insert a metallic bougie until the wound in the perineal portion of the urethra has healed.

Internal and External Urethrotomy Combined.—This mode of treatment was first resorted to by Reginald Harrison for the relief of either traumatic or organic strictures that were resilient, irritable, nodular, or associated with urethral fistulæ. The method should also be reserved for those cases in which the coarctation is permeable only by a filiform bougie.

It has been proved by clinical experience that dilatation, incision, and perineal drainage, by thus putting the urethra at physiologic rest, not only prevent the development of urethral fever after operation, but cause a fatty degeneration atrophy, and absorption of the cicatricial tissue to take place, which result in permanent benefit, the walls of the urethra becoming soft and pliable.

When the stricture is dilatable, the operation is done in the manner previously described—*i.e.*, by first effecting either gradual or modified rapid dilatation, after which an external perineal urethrotomy is performed, any remaining obstructing bands in the urethra being then severed by means of the Otis urethrotome.

The operation for the relief of strictures permeable only by a filiform will be considered under the head of external urethrotomy by means of a guide.

External Perineal Urethrotomy.—General considerations: This operation is performed either with or without the aid of a guide in the urethra. When done with the guide, the operation is a comparatively easy one. In cases of traumatic impermeable strictures or of rupture of the urethra with extravasation of urine or blood, the normal relation of the tissues of the perineum being distorted, this operation when done without a

guide may become one of extreme difficulty. To insure success a good light, perseverance, and a thorough practical knowledge of the anatomy of the perineum are essential. Perineal urethrotomy is done for the relief of non-dilatable, irritable, resilient strictures of small caliber, associated with urinary fistula or abscess of the perineum. It is also performed in impermeable strictures, either with or without retention of urine, rupture of the urethra, and is done in conjunction with an internal urethrotomy performed on some other portion of the canal.

Technique: The patient should be placed in the lithotomy position on a firm operating table, the buttocks projecting slightly beyond the edge of the table, and elevated by means of a sand pillow; the legs are flexed on the thighs and the thighs on the abdomen, being held in this position by assistants. This method is preferable to the employment of the crutch apparatus so commonly used for this purpose. The perineum will now be on the same plane as the eye of the operator when seated opposite the patient, allowing him to look down into the perineal wound and thus observe every step of the operation. A good light, as previously stated, is essential. The hemorrhage following perineal section is not as a rule severe; if, however, it is profuse, its origin is generally in the region of the bulb, coming from the incised ends of the urethra or from the plexus of veins in the neighborhood of the prostate gland. It can usually readily be controlled by packing the wound firmly with iodoform gauze, which is carried along the side of the catheter up to the neck of the bladder. When this is not effective, and the application of a ligature is difficult, the wound should be separated by means of retractors and the bleeding vessels seized by hemostatic forceps, which should be allowed to remain *in situ* for three or four days. If the hemorrhage comes from the bulbous portion of the canal, this should be exposed by free incision and the bleeding vessels controlled by either ligature or purse-string suture.

The question of drainage after a perineal urethrotomy is one of great importance. I have found it best in such cases to resort at once to continuous catheterism. A full-sized soft-rubber catheter is passed and allowed to remain in the urethra until the new canal has formed about it. The effect of the continuous pressure exerted on the inflamed and congested urethra is most beneficial. Tenesmus is relieved, the bladder is put at rest, and a urinary fever is prevented. Convalescence is assured without the formation of a perineal urethral fistula. In cases in which combined internal and external perineal urethrotomy has been performed, and it is then found difficult to pass a catheter in the usual manner because of the rough and nodular condition of the urethra, the modulation may easily be accomplished by inserting a pair of long forceps, designed for removing foreign bodies from the urethra, through the meatus and making the jaws of the instrument appear at the perineal wound. The proximal end of the catheter is then caught and drawn from behind forward, until it protrudes an inch or so beyond the meatus. The vesical end is then passed along a probe-pointed gorget through the membranes and along the prostatic portion of the urethra into the bladder.

When there has been an infiltration of urine into the perineum, a perineal abscess, sinus, or large amount of nodular tissue due to chronic inflammation, no effort should be made to close the perineal wound; if none of these conditions exists, the wound should be approximated by means of interrupted silkworm-gut sutures, leaving a small opening at the lower angle for the protrusion of the gauze packing, which should be removed on the second day and not replaced. The packing of a perineal wound for prolonged periods after operations is undoubtedly a frequent cause of delay in healing, the result of the formation of a fistulous opening. The end of the catheter protruding from the meatus is connected with a rubber tube leading to a vessel under the bed, into which the urine drains from the bladder, the patient being thus kept dry and clean.

External Perineal Urethrotomy with a Guide.—In this operation the membranous

urethra is opened with the aid of an instrument that serves to guide the surgeon by rendering the deep urethra easy of recognition by means of an incision in the perineum. Various instruments are employed for this purpose, among them being the Symes staff, the grooved urethral staff, the Gouley tunneled catheter, the Thompson dilator, and the whip or whalebone bougie used in conjunction with Horwitz's dilating perineal staff. In addition to the guide there are required a scalpel, scissors, hemostatic forceps, Wheelhouse probe, Teal probe-pointed gorget, perineal retractors, a soft-rubber catheter, and an Otis urethrotome. The Symes staff is the guide usually employed, but I have found this instrument unsatisfactory for the reason that the narrowed terminal third of the shaft, which is intended to pass through the contracted portion of the urethra, may in a deep perineum be difficult to locate and thus render fixation of the urethra so that it may be incised troublesome; moreover, the channel is so shallow and narrow that it is often impossible to keep the point of the knife in the groove, and as a result the blade is constantly slipping from the guide before the incision is completed.

In order to employ the Symes staff it is necessary that the stricture should have a caliber of six millimeters; if this is the case it is much quicker, more satisfactory, and easier first to stretch the stricture by means of modified rapid dilatation, and then either to employ the Thompson instrument as the guide or to make use of the full-sized grooved urethral staff. The technique of an external perineal urethrotomy performed by means of the Symes staff, the Thompson dilator, or the grooved urethral staff is practically the same in each instance.

External Perineal Urethrotomy, Using the Thompson Dilator as a Guide.—Ether is administered, a filiform bougie is inserted and the Thompson dilator threaded over it and passed into the urethra as far as the neck of the bladder. Modified rapid dilatation is then performed, and the blades of the instrument left separated just sufficiently comfortably to distend the urethral walls and hold the canal firm and steady. An assistant holds the staff up against the abdomen in the median line, and hooks it up against the pubic bone. The patient is placed in the lithotomy position. The scrotum is drawn up out of the way, and the instrument so held that it can readily be felt in the membranous urethra by palpation of the perineum. An incision is now made along the median raphe, from the attachment of the scrotum down to the region of the sphincter ani, dividing the skin and superficial and deep perineal fascia, exposing the accelerator urinæ muscles at the bottom of the wound; the tendinous raphe is next divided, bringing the urethra into view, which is thus fixed and distended by the aid of the dilator. A tenaculum is next passed on each side of the staff into the urethra, and placed in the hands of the assistants who are holding the leg, directing them to make gentle traction, which brings the urethra prominently into the wound, where it can readily be incised, the guide being exposed *in situ*. The edges of the incised urethra should then be seized with hemostatic forceps, which are handed to an assistant, and the tenaculum removed. The Wheelhouse probe is next introduced through the membranous and prostatic urethra until the neck of the bladder is reached; this instrument serves to guide the Teal gorget through the perineal wound down to the neck of the bladder; as soon as this is accomplished the Wheelhouse probe and dilator are removed. Any remaining constricting bands caused by the stricture are incised and dilated by means of the Otis urethrotome; a soft-rubber catheter is inserted from the meatus into the bladder, and left in place until the continuity of the deep urethra has been restored. Bleeding is controlled by packing the perineal wound with iodoform gauze alongside the catheter, using the gorget as a means of guiding the gauze down to the neck of the bladder. The gauze should be allowed to remain for forty-eight hours, and then removed and not replaced. The perineal wound is closed by means of interrupted silkworm-gut sutures, leaving a small opening at the

lower angle for the protrusion of the packing.

Perineal Puncture of the Membranous Urethra (Buttonhole Operation).—This method of performing perineal urethrotomy is sometimes employed when it is desired to drain the bladder after an internal urethrotomy has been performed.

A grooved urethral staff is passed, the patient is placed in the lithotomy position, and a long straight bistoury, with a narrow blade, is inserted one inch in front of the anus, its back being turned toward the rectum; the instrument is carried steadily inward in the median line until it reaches the groove in the staff inserted into the urethra, thus puncturing the membranous urethra; as the knife is removed the incision is slightly enlarged upward so as to make it of sufficient length to permit the insertion of the index-finger. If the mucous membrane of the canal has not been completely divided, the tip of the finger is held against the staff and a probe-pointed bistoury is inserted alongside of the finger as a guide until the staff is reached, when the undivided tissue between the finger and the staff is incised. The Wheelhouse probe is now passed into the perineal puncture along the groove in the staff until the neck of the bladder is reached; this serves to guide the passage of the Teal gorget, after which the urethral staff and probe are removed and a drainage-tube is passed along the Teal gorget and fastened in place.

External Urethrotomy for Stricture Permeable Only by a Filiform.—By using a perineal staff of my own contrivance, this operation has been greatly simplified; the instrument may be employed with either a whip or a whalebone filiform bougie. The instrument consists of two blades in close approximation, which together form a smooth staff, having a thumb-screw at one end, by means of which the blades may readily be separated. It works on the same principle as the Otis dilating urethrotome. The distal end of the staff terminates in a rounded nut, which can be removed and replaced by a whip filiform. An opening in the nut at the end of the staff will be observed, which leads into a tunnel through which an ordinary whalebone filiform can be passed. The filiform is employed when it is found impossible to insinuate the whip bougie, it being frequently the case that the former instrument can be introduced when the passage of the latter cannot be achieved. From this it will be observed that the staff can be used with either an ordinary filiform or whip bougie, or even without any guide.

When the whip bougie can be passed through the stricture, it is fastened to the perineal staff. The blades of the instrument are closed, and the staff is passed into the urethra until arrested by coming into contact with the shoulder of the stricture. The whip bougie, being pushed in front of the staff, reaches the bladder and curls up, and when the urethra is opened serves to guide the operator, as it is inserted directly through the stricture. If the whip bougie cannot be passed through the stricture, a whalebone filiform is inserted. The tunnel end of the staff is threaded over the filiform and introduced into the urethra until arrested at the contracted portion of the canal. By turning the thumb-screw the blades are separated. The amount of separation is noted on an indicator on the handle of the staff. When the blades are separated the urethra in front of the stricture is not only fixed, but rendered prominent, and the operator, after making the incision through the skin, can readily open the urethra with precision and ease. The separation of the blades fixes the urethra and serves to hold it steady. When the staff is in position, with blades expanded, the location of the urethra can readily be detected by palpation over the tissue of the perineum. Whenever the whip bougie or filiform is employed in conjunction with the staff, the urethra can readily be detected, and when the latter is incised the instrument will be found passing through the stricture, and can be traced without difficulty to the entrance of the bladder.

When the patient has been placed on the operating table, an effort should be made to introduce the whip bougie; if this fails a filiform should be inserted, and the perineal

staff threaded over this and passed down to the strictured portion of the urethra; the blades are then separated and given to an assistant to hold, who at the same time lifts the scrotum out of the way. The patient is then placed in the lithotomy position, the leg being flexed firmly on the thigh and the thigh on the abdomen. The buttocks should project slightly beyond the edge of the table, and be elevated by means of a sand-pillow, so that the perineum is on the same plane with the eye of the operator. A free incision is made through the skin, extending from just below the junction of the scrotum with the perineum to the anterior border of the sphincter. The superficial and the deep layers of fascia are next divided for the whole length of the incision, which exposes the accelerator urinæ muscle. This consists of two symmetric halves united along the middle line of the perineum by a tendinous raphe that serves to mark the exact location of the urethra. When the surgeon is about to penetrate the perineum he must be careful not to carry the incision higher than the attachment of the central tendon, for fear of wounding the bulb; in cutting downward he must guard against injuring the rectum. The space that he can work in with safety is a little over half an inch. The tendinous raphe of the muscles should now be divided, thus bringing the urethra into view; with the aid of the perineal staff the canal is fixed and distended. A tenaculum is then passed on each side of the staff and placed in the hands of an assistant, who is directed to make gentle traction, which brings the urethra prominently into the wound, where it can be incised, in front of the stricture, when the staff will be exposed in position. The edges of the incised urethra are then grasped by means of hemostatic forceps and given into the hands of an assistant, the tenacula being removed. The upper angle of the wound in the urethra is likewise seized with forceps, which the surgeon holds in his left hand, making traction on three portions of the urethral incision, and pulling the strictured surface of the canal so that it presents directly in front of the operator. The Wheelhouse probe is then made to follow, through the stricture, the whalebone filiform or the whip bougie, whichever had been employed. As soon as the aperture of the stricture is located the probe is inserted by the side of the filiform, parallel to the perineal raphe, and carried along the contracted portion of the urethra until the point reaches the floor of the perineum, just above the rectum. The index-finger of the left hand inserted into the rectum serves as a guide. The probe is brought from the vertical to the horizontal position and made to pass directly through the prostatic urethra into the bladder. In some instances it will be found, after the instrument has been inserted into the upper portion of the membranous urethra, that it is impossible to make it describe the curve naturally assumed by this portion of the urethra; this difficulty can readily be overcome by inserting the index-finger of the left hand into the rectum, at the same time dissecting the tissues of the perineum, including the strictured portion of the floor of the urethra, directly down upon the probe; the handle of the instrument can then be readily depressed and carried into the bladder. When the probe has entered the bladder, it is handed to an assistant, who grasps it firmly. With the index-finger in the rectum, which serves to prevent injury to that canal, a probe-pointed bistoury is passed along the groove on the under surface of the probe, so as to divide the structure throughout its entire length, after which the Teal gorget is passed beside the probe, until the point of the instrument enters the bladder. An evidence that this has been accomplished is the fact that urine will be seen to flow along the instrument. The probe is then removed, and a soft-rubber catheter passed through the penile urethra until the point of the instrument appears in the perineal opening, when it should be seized between the finger and thumb of the surgeon, pulled well into the incision, and made to pass along the gorget into the bladder. The wound should then be partially packed with iodoform gauze and closed with interrupted silkworm-gut sutures, leaving the lower angle open for drainage.

(To be concluded.)

EDITORIAL.

THE USE OF HEXAMETHYLENAMIN, OR UROTROPIN, AS AN INTERNAL ANTISEPTIC.

It has been known for a number of years that hexamethylenamin can be administered with advantage to patients convalescent from typhoid fever with the object of diminishing the number of typhoid bacilli in their urine, thereby preventing the spread of the disease by the contamination of the food or drink of other persons. It also diminishes the frequency of the genito-urinary complications of this disease, although these complications are so rare as not to be important factors in the average case. More recently it has been proved by Crowe, whose research we quoted in the editorial columns of the GAZETTE some months ago, that the antiseptic educt of hexamethylenamin is eliminated in the biliary passages, and that its administration can be resorted to for the purpose of preventing or combating typhoid and other infections in the biliary ducts and gall-bladder.

In the issue of the *Johns Hopkins Hospital Bulletin* for April, 1909, Crowe makes a still further contribution to the study of the excretion of this drug, and points out that when it is taken in fairly large dose it speedily appears in the cerebrospinal fluid. In other words, if a patient receives 10 or 15 grains of urotropin it can be found in a remarkably short period of time in the cerebrospinal fluid which is obtained by puncture. Much of course depends upon the ability of the alimentary canal to absorb it, but the average time would seem to be from thirty minutes to one hour between administration and excretion in the fluid. The mere fact that such an excretion takes place is of considerable interest, but Crowe went further than this and determined that the cerebrospinal fluid possesses under these circumstances a germicidal power which ordinary cerebrospinal fluid does not possess. Using the fluid obtained from patients which were receiving this drug he studied the effects of it upon the streptococcus and found that a decided inhibitory effect on the growth of microörganisms was exercised. He also found that if a subdural inoculation of animals was performed, and 60 to 80 grains of urotropin a day was given, the drug markedly deferred and in some instances prevented the onset of a fatal meningitis. Doses of 60 to 80 grains a day to a dog or rabbit are of course exceedingly large and far beyond the quantities which are commonly given to man, being equivalent to several hundred grains a day for an adult. In this respect a further investigation will have to be made before it can be determined that ordinary doses actually arrest infection which is already present.

Crowe's experiments, with moderate doses, both in man and animals, show that they exercise a distinctly prophylactic influence, and he states that during the past year it has become a routine measure in the Johns Hopkins Hospital to promptly administer urotropin to all patients with lesions that are commonly followed by an infection of meninges, and that during this time there has been a complete absence of such complications, although an extensive series of cases has been under observation. The doses employed in this series varied from 30 to 60 grains of urotropin a day given by the mouth. The drug has also been used when given by the mouth before and after severe operations upon the cerebrospinal system with the object of diminishing the chance of infection.

THE EFFECTS OF ANESTHETICS UPON BODY TEMPERATURE.

As long ago as 1888 the writer of this editorial note published in the original columns of the THERAPEUTIC GAZETTE a report of a series of cases in which he studied the effect of ether upon the temperature of patients who were subjected to operation, and also made certain observa-

tions in regard to the effects of this drug upon the temperature of the lower animals. Prior to that investigation Kappeler had in 1880 carried out a series of somewhat similar observations and arrived at identical conclusions, and since that time Allen in 1897 and Morley in 1903 have done likewise. It is being more and more recognized by careful surgeons that the maintenance of body heat during operations is a factor of very great importance if subsequent complications are to be avoided.

Attention is once more called to this important matter by the contribution which is made to the *Johns Hopkins Hospital Bulletin* for April, 1909, by Davis, who reviews the literature and publishes the observations which he has made upon a number of dogs, not only as to the effects of anesthetics in lowering temperature but also as to the influence of the simultaneous use of morphine and the effect of heat applied before, during, and after operation. He also has extended his observations to human beings, with the result that he is most emphatic in the condemnation of the exposure to which many patients are subjected. Not only do patients under the influence of general anesthetics lose heat rapidly because their vital processes are impaired, but they also lose heat because of its loss through the inhalation of cold ether vapor. Griffith believes, and we have long thought and taught in accordance with his conclusions, that all the anesthetics generally used decrease body heat, and that the surrounding of the field of operation with wet towels very greatly increases this loss and should be studiously avoided. He thinks that the warming of ether vapor before it is inhaled is dangerous, but he does not find that the preliminary administration of morphine materially influences the loss of temperature produced by ether inhalation. He therefore urges that patients about to be subjected to operation with the use of ether or chloroform should not only be kept dry and warm but anesthetized in a room free from draughts, and should not be transferred to a cold room even after the anesthetic is discontinued. The temperature of the anesthetizing room, he thinks, should be somewhere in the neighborhood of 80 degrees.

THE CONTROL OF INTERNAL HEMORRHAGE.

There are few conditions which give rise to greater anxiety than the development of internal hemorrhage, and there are few in which the physician feels so impotent. A host of measures designed to cause constriction of the bleeding vessel, from gallic acid to adrenalin, have been employed by many practitioners. We are frequently asked whether we consider that these measures are efficacious, and we confess that our opinion concerning them is that they are of little value. In the case of ergot and adrenalin, which are supposed to act by constricting the vessel involved, it would seem probable that the general rise of arterial pressure which these drugs produce tends to increase the hemorrhage rather than diminish it, and so far as we know there is nothing to indicate that they have any special effect upon the individual vessel which is bleeding.

In this connection we have read with much interest the report of an experimental research carried out by Dr. Wiggers, of Detroit, and published in the *Archives of Internal Medicine* of March 15, 1909. In this research Dr. Wiggers attempts to decide some of the mooted points which we have just spoken of. It is not possible for us to go into a minute analysis of the technique of his investigation, but the conclusions at which he arrives are of considerable importance, since he not only employed adrenalin but also used nitroglycerin and other nitrites to determine how valuable the method of reducing blood-pressure is in diminishing hemorrhage. He finds that large doses of adrenalin cause a short preliminary increase in hemorrhage, followed quickly by a decrease or cessation of bleeding, and he also finds that this great preliminary loss of blood is such an important factor that adrenalin cannot be considered as valuable if the condition of the patient is acutely grave. Small doses of adrenalin, on

the other hand, shorten the duration of hemorrhage and cause little or no preliminary increase, and therefore small doses may be more advantageous than large ones.

Whatever the true value of adrenalin in the actual control of hemorrhage, the method of its administration is of the greatest importance if its effects are to be induced. Wiggers found that no results in any dose are obtained by subcutaneous administration, but that intravenous injection of weak solutions, or intramuscular injections, are followed by distinct physiological effects. He believes that adrenalin is not indicated in all internal hemorrhages in any dose, but that its administration must depend upon the degree of blood-pressure which is present, and we think that he has reached an important and correct position in regard to this matter. He advises that when a hemorrhage is severe and of short duration and the blood-pressure has not fallen to any extent, adrenalin should not be employed, and that the use of the nitrites to lower pressure is more advantageous. On the other hand, if the bleeding has been profuse and a low pressure exists as a consequence of free bleeding, the nitrites can do little good and adrenalin may be of value, if used in moderate dose intravenously, the object being to maintain a blood-pressure sufficiently high to supply the vital centers with blood without using so large a quantity of the drug that a very high pressure is developed whereby the clot is dislodged.

Wiggers thinks that the use of adrenalin in cases of internal hemorrhage should be largely controlled by blood-pressure estimation, and that the size of the dose must depend upon the estimations so obtained. Very small doses should first be used. If no rise occurs larger ones may be injected until some effect is produced. But large doses should not be primarily used lest an overeffect be developed. The value of the nitrites in controlling internal hemorrhage without doubt depends upon the fact that the lowered blood-pressure diminishes the leak in the ruptured vessel. The value of adrenalin in cases of internal hemorrhage appears to depend not so much upon its ability to constrict a bleeding vessel as upon its power to equalize the circulation and by vasoconstriction to supply the medulla with an adequate quantity of blood.

THE INDICATIONS FOR NEPHROPEXY.

To those who judge of surgical practice by the general trend of current literature, it would seem that the enthusiasm for fixation of a movable kidney, at one time very general, has almost completely subsided and that this operation is exceptional rather than usual, and is performed only when well-marked symptoms referable to the kidney are present.

The surgeon who carefully and skilfully examines the patients who present themselves to him recognizes the fact that in long bodied, lean, neurasthenic women a palpable right kidney is almost the rule; that this mobility may be so great that the organ displaced downward by deep inspiration may be held by the examining fingers during the expiratory effort; and that these patients as a rule complain of no symptoms which logically can be attributed to the renal mobility. It is also recognized that the kidney normally is a mobile organ. The results of fixation of these symptomless kidneys have not been sufficiently gratifying to the majority of those who have operated to justify them in advising surgical intervention, save in exceptional cases. It thus happens that the fixation of a mobile kidney in these days is a rather unusual operation for the surgeon, since his operative measures are usually undertaken for the relief of symptoms distinctly referable to the kidney, and the therapeutic results in these selected cases are excellent. With these facts an article such as that contributed by Billington (*British Medical Journal*, May 1, 1909), which would have been accepted as rather extraordinary ten years ago, causes in the mind of the usual hospital surgeon a feeling of astonishment. Billington, who announces his official position as surgeon to out-patients, Queen's Hospital, Birmingham, states that his paper is the outcome of 150 cases of nephropexy

all performed during the last three years. In 96 cases one kidney only was fixed, while in 54 both were dealt with at the same time. During the month he allows his patient to get out of bed, wearing a belt thereafter for six months. This belt is shaped clear to the hips and comes down in front as low as the pubes. Just internal to each anterior superior spine are placed two soft pads covered with wash-leather. These soft pads are held to give a little extra pressure immediately below the kidney.

Billington states that when both kidneys are movable it is better practice to fix both. He observes that the surgical results of nephropexy have been very satisfactory. Of the 206 kidneys dealt with not one has become loose again. It is fallacious to suppose that the trouble caused by a kidney is to be directly measured by the degree of its mobility.

The cases are arranged in three groups. The first group includes those whose predominant symptom is local pain. In the second group are placed those whose predominent trouble is associated with digestive symptoms. Usually the right kidney is movable, but as the kidney is not tender there are no symptoms which can be definitely attributed to it.

The third group of cases are those suffering from spinal and cerebral neurasthenia. It is justly stated that these patients eagerly grasp at anything which holds out a prospect of relief, and the author states that comparatively young and healthy people suffering from progressive neurasthenia who do not improve under medicinal and general treatment, or having improved, rapidly relapse on returning to the ordinary conditions of life, should be examined for renal mobility. If the kidneys are mobile and there are no conditions present which would render the operation dangerous, the patient should be told that nephropexy would probably be followed by marked improvement. In such cases it is unfair to regard the condition as incurable until the kidneys have been fixed. Time must be allowed for improvement. The results of operation should not be estimated until six months afterward. Rapid improvement may be deceptive, and relapses may occur later.

The fourth group includes the cases of undoubted lunacy. Twelve lunatics have been operated upon, no one of whom is now in an asylum. Six of them are well, and of the remaining five still living the author hopes that time will complete the improvement that has already commenced. He very conservatively refrains from stating that movable kidney is the sole cause of the insanity; he positively asserts that in a person with unstable mental equilibrium it is sufficient to turn the balance, and he holds that the removal of the baneful influence exercised by a loose kidney will be followed by a definite percentage of cures. He urges that where the kidneys are found to be movable in an insane person, in justice to the patient and the friends nephropexy should be advised before the case is sent to an asylum. Comment upon this paper seems scarcely needful.

TREATMENT OF MORBID CONDITIONS OF THE PLEURA.

In recent years there has been so much published concerning pleural effusions by both laboratory workers and clinicians that it would seem reasonable to suppose our knowledge concerning the etiology, symptomatology, and treatment of these affections was thoroughly systematized. As to etiology, there remains more to be discovered than is yet known. The pathology of the affection is by no means yet completed, and the symptomatology has not reached a point of perfection which enables in many cases more than a gross diagnosis to be formulated. As to treatment, the indications for the various forms of operation are interpreted by different surgeons in different ways.

Bradshaw *(British Medical Jou*rnal, May 15, 1909) scarcely voices the general feeling toward paracentesis in pleural effusion when he states that every effsuion big enough to diagnose is big enough to tap.

He, however, makes a reservation that effusions apparently small and unattended by any special local or constitutional disturbance should be left for a reasonable time in the hope that they may undergo spontaneous absorption. He believes that the persistence of signs of a small effusion is no less an indication for paracentesis than are symptoms, such as dyspnea, incident to the embarrassing effect on the heart and lungs of an obviously large pleural exudate. The physical signs are not always proportionate to the size of the effusion, which may be much greater than it appears to be. Until some of the fluid is extracted for examination we can never be certain as to its nature, whether serous, purulent, or hydatid, and the prolonged presence of a small collection of serous effusion in the pleura is not to be looked upon with indifference, since a tuberculous effusion, having a lower tuberculo-opsonic index than the other fluids of the body, favors the existence of the bacilli in the parts which it bathes and so should be gotten rid of as speedily as possible. For the performance of paracentesis a trocar and cannula of sufficient caliber to allow pus to flow through it and a pneumatic aspirator are used. The practice of making a preliminary exploration with the syringe and a fine needle is regarded as superfluous and undesirable. After puncture the flow should be slow and not more than 50 ounces should be withdrawn at the first operation, since the remainder will probably undergo absorption.

The presence of blood in such amount as to give a red color to the fluid is not uncommon and is of no special significance, but a brownish or chocolate color due to altered blood suggests the possibility of the existence of malignant disease. Bradshaw states that in general terms we should suspect the possibility of malignant disease in any case of pleurisy which, as regards its signs, symptoms, and progress, does not conform to the type with which we are familiar. Signs of pressure on structures not usually involved in pleural effusion, or of pressure not relieved by the removal of the fluid, strongly suggest a new growth. In some cases one remains in doubt up to the very last as to whether the affection is malignant or tubercular, and even at the post-mortem examination a skilled pathologist may be unable to distinguish between them until a careful microscopic examination has been made. In two cases hemorrhagic effusion was observed.

As to empyema, Bradshaw holds that there are no signs or symptoms to distinguish it from serous effusion until some of the fluid has been removed for inspection. After many years' consideration Bradshaw has come to the conclusion that there is only one line of treatment to be adopted in every case of empyema, and that is the establishment of free drainage by incising the pleura and introducing a good-sized drainage-tube.

The belief that permanent collapse of the lung is to be expected to follow the free admission of air into the pleura has led to the expenditure of no small amount of ingenuity in the vain and pernicious attempt to drain an empyema in such a manner as to allow the pus to escape, while preventing or restricting the entrance of the air. The usual result of such procedures is that the drainage is not free, that septic organisms gain entrance to the pleura, that the discharge becomes offensive. and that after much useless suffering and delay resort has to be had to a free incision. After such free incision a complete return to normal is possible even though the collection of pus be very large. Operation consists in removal of a portion of rib, usually done under injections of eucaine or novocaine, it being stated that the incisions are thus made almost painless. It is pointed out that inflammatory or other disease conditions below the diaphragm are likely to give rise to signs pointing to disease of the pleura, and these may for a time quite overshadow the primary disorder. This teaching is in marked contrast to Murphy's practice, the injection of formaldehyde and glycerin, by virtue of which he has practically abolished from his clinic the operative treatment of empyema.

REPORTS ON THERAPEUTIC PROGRESS.

THE USE OF ADRENALIN CHLORIDE IN THE EYE, EAR, AND THROAT.

McFARLANE in the *Canadian Practitioner* for June, 1909, in writing on this subject says that adrenalin has been used with unfailing satisfaction, providing care was taken not to use the solution in too great strength, pain being occasionally noted in the nose and face when 1:1000 was painted upon the turbinals; also in three cataract extractions it seemed to cause a profuse hemorrhage from the iris when iridectomy was done, which may have been only a coincidence.

In fifty cases of conjunctival injection from causes varying in nature from simple congestion due to eye-strain to the most severe types of conjunctivitis, a single drop of adrenalin chloride solution, 1:5000, in the conjunctival sac almost immediately caused a blanching of the membrane, commencing in about ten seconds, and reaching a maximum in from five to ten minutes, the effect lasting from one-half to two hours, according to the nature of the case. The blanching effect may be obtained by even a solution of from 1:12,000 to 1:10,000 in from thirty seconds to two minutes. For practical purposes a solution of 1:2000 was found to give the best results in operative work upon the eye, causing no irritation that could be noted upon close observation. A two-per-cent solution of cocaine hydrochloride was used ten minutes prior to the instillation of the adrenalin, when operation was contemplated, in order that the effect of the anesthetic might not be interfered with, thus insuring a painless and almost bloodless result.

In ten strabismus operations and one advancement of the internal rectus muscle, two drops of a 1:1000 solution rendered the various procedures almost bloodless fifteen minutes after being dropped on the conjunctiva, a deep as well as superficial hemostatic action resulting. In an operation at St. Michael's Hospital for the removal of an eye, not more than ten drops of blood was lost, and this after five drops of a 1:1000 solution of adrenalin chloride was placed in the conjunctival sac, ten minutes prior to chloroform anesthesia. The effect seemed to extend to the central artery of the optic nerve, thus proving the rapid absorption of the active principle, with control of the deep as well as superficial circulation of the parts. In diseases of the eye with a tendency to iritis or choroidal disease, where an astringent is contraindicated, and in corneal ulceration, adrenalin should not be used, but whenever an operation is required adrenalin will be found to be an invaluable adjunct.

It is in operations on the nose, throat, and ear that the specific action of the active principle of the suprarenal gland proves its great value as a hemostatic; the tendency to hemorrhage, controllable with difficulty, being one of the drawbacks of the surgery of these organs.

For a number of years the writer has used with great satisfaction various solutions of the suprarenal extract in the removal of septal spurs, cartilaginous outgrowths, septal deviations and hypertrophy of the turbinates, the only drawback being the difficulty of preparing fresh solutions and the danger of irritation which so frequently existed. This, however, has been overcome, adrenalin giving better results without the concomitant disadvantages. The strength used was 1:2000 applied by means of a cotton carrier, after local anesthesia had been accomplished by a two-per-cent cocaine solution.

In this manner a number of large spurs and cartilaginous growths were removed with scarcely any hemorrhage. In addition to the hemostatic action, the contractile power of the drug upon the turbinate tissues greatly enlarges the field of vision for exploratory and operative measures.

For the removal of adenoid vegetations the vault of the pharynx is sprayed with a

1:5000 solution of adrenalin with five per cent of chloretone, the result being all that could be desired. Except in the case of very small children the writer never uses a general anesthetic, thus obviating one of the grave dangers attending these operations, the obtunding action of the chloretone being quite sufficient in the majority of cases to render them practically painless. Cocaine is occasionally used in three-per-cent solution applied by a swab to the pharyngeal vault, when the patient is over twelve years of age.

In hay-fever, the treatment of which has been so unsatisfactory, good results have been obtained by a spray of suprarenal extract to the nose, together with the administration of pil. antineuralgic (Brown-Sequard), one-half strength, thrice daily; and the use of sodium salicylate grs. v, potassium bicarbonate grs. xx, in aqua mentha piperita, t. i. d.

Adrenalin being so much better than the old suprarenal extract, the writer feels confident of the results which will be obtained from its use during the hay-fever season.

In tonsillotomy the gland is to be painted by a solution of 1:1000 of the adrenalin chloride, or a 1:5000 solution may be injected into the tonsil, which renders its removal almost bloodless. In cautery operations on the tonsil the gland melts away like cheese, no hemorrhage interfering with the heating of the point of the instrument, a fact greatly appreciated.

As to drawbacks to the use of suprarenal gland extract, a certain amount of controversy has existed as to the greater danger of secondary hemorrhage after its use, some eminent observers holding that such exists, others claiming never to have noted it. In the writer's opinion the great law of action and reaction holds good, and a slight tendency to after-hemorrhage exists undoubtedly, but is not in any sense dangerous and can be combated with unusual success if the cut surfaces are swabbed with a solution of glycerin and alcohol, equal parts. Another point is to be noted, and that is to be very careful to apply the adrenalin solution only to the part to be operated upon, thus limiting its action. During the past three years six cases have been treated in hay-fever patients where a severe pain behind the eyes came on after the suprarenal extract had been used in spray form, as well as uncomfortable sneezing. But adrenalin in normal saline solution has been almost without irritation, according to the experience of the writer.

MARRIAGE BY THE SUBJECTS OF CARDIAC DISEASE.

The question of the legal regulation of marriage in cases of hereditary disease, of insanity, or other form of disability is one of the live questions of the day.. It would seem that an intelligent public should be trusted to handle such a matter, since it is a question of the health of their descendants. Unfortunately, the public is neither well informed on the subject of heredity nor willing to be so informed by the family physician, when it becomes a question of the selection of a life partner. The contracting parties are much more interested in matters of the heart concerning themselves than in the health of their offspring. They have a blind confidence that fate will not mete out to them the ills that have come to others, and that a gracious Providence will make an exception of their particular descendants, and they feel much concern when the very evils that the family physician could have predicted befall their children.

Louis Renon, in the *Gazette des Hôpitaux* of March 18, 1909, takes up the question of whether persons who have cardiac disease should be prohibited from marrying. He says that the question differs with the sex of the person. There is practically no danger to the man in most forms of cardiac disease, since the regulation of his life by marriage is rather of benefit to his heart condition. The question of the probable inheritance by the children of his disease depends on the form of disease, cardiac sclerosis, interstitial nephritis, and aortic disease being frequently inherited. Cardiac valvular troubles are

probably not inherited. The mother is the parent whose cardiac condition is subjected to extra strain by pregnancy, labor, the puerperal state, and lactation. There is danger that the fetus will die during pregnancy or labor, or survive with a cardiac difficulty. The dangers to the mother are of two kinds—cardiac insufficiency and acute pulmonary edema. Cardiac insufficiency is manifested toward the end of the first half of pregnancy by dyspnea, violent palpitation, and repeated hemoptysis. Acute pulmonary edema occurs toward the end of pregnancy or during labor, is accompanied by asystole, and ends in death before delivery. In severe cases of heart disease and in young subjects marriage should be forbidden. Changes in arterial tension give an important indication, hypertension or hypotension both being unfavorable conditions if continuous. In all other cases the woman may go on to a successful end of pregnancy. A cardiac should not marry another cardiac, nor a near relative. The social position of the woman is important, since if she is able to lead an easy life the prognosis is better than in a working woman. Precautions should be taken in case of such marriages during pregnancy to protect the mother against extra strain. Her nutrition and the kidney condition should be carefully watched, and from the end of the fourth month of pregnancy the patient should have rest and avoid all fatigue. A slow labor should be hastened by version or forceps. Thus, Renon says, we may hope to conduct the pregnancy to a successful issue.—*Medical Record,* June 12, 1909.

TREATMENT OF SHOCK DURING ANESTHESIA.

In the course of an interesting paper which is printed in the *Proceedings of the Royal Medical Society of London* for April, 1909, BUXTON says he has attempted to advance the thesis that the anesthetic promotes shock, and that therefore the prevention of shock lies largely in the direction of minimizing the actual amount of the anesthetic and more particularly of the percentage value of the anesthetic. One point, however, he wishes to make quite clear. He holds very strongly that insufficient narcosis, that degree below anesthesia, before the perceptive centers are in absolute abeyance is in most cases highly dangerous for operations. Until we have piloted our patient past this condition we have not protected him from the danger of psychic syncope and the perils of uneven narcosis, brought about by irregular nervous explosions causing respiratory and circulatory storms which always make for danger. The degree of narcosis which we call the state of anesthesia has, he takes it, its physical counterpart in a certain quantity of chloroform or other anesthetic being distributed evenly throughout the tissues of the body. It has caused some fall of blood-pressure and some respiratory paresis, and to protect from shock we have to prevent further declension of blood-pressure by lessening the amount of the anesthetic, and to obviate the respiratory disability by supplying oxygen *pari passu* with the anesthetic.

The antecedent treatment of the patient is also important. While not convinced of the correctness of the view which has been advanced that the ordinary routine of diet should be pursued before operation, the author believes we invite shock when we permit an excessive period of starvation, or compel a person who does not habitually drink beef tea at 6 A.M. to do so. Severe purgation and the employment of enemata immediately before the operation are certainly dangerous in many cases; and the author is convinced that a few days' dieting and gentle regulation of the bowels are safer than more drastic measures. To his mind warmth applied over the whole body, a hot but not stuffy operating room, a "head-down" position, with avoidance of all sudden changes of posture, a supply of oxygen, the rigid diminution of the percentage strength, and the actual amount of the anesthetic regulated to meet the requirements of the steps of the operation are the most important items in prevention of shock. The choice of the anesthetic cannot

be decided except upon the merits of each case, and must depend largely also upon the custom of the anesthetist, since absolute control is essential. This is only possible when the anesthetist is familiar with his method. The method is, the author thinks, more important, and he submits no method is to be advocated for universal use which does not enable the administrator to control with scientific accuracy both the percentage and the total quantity of the anesthetic he employs.

Of the safety of chloroform given in this way he is assured. There are many plans for obtaining its dilution; the A. C. E., the C. E., and other Continental mixtures, including Schleich's solution, are but means of arriving roughly at percentages of chloroform. The dilution with alcohol 1 in 10, which Schäfer and Scharlieb have advocated, appears to be the best, and when an open method is used should be employed, since Schäfer's and Scharlieb's experiments show that the alcohol does antagonize the depression due to chloroform, while ether behaves mainly as a diluent.

There are other and subsidiary plans for lessening the amount of anesthetic necessary for a prolonged operation. The psychic element must not be forgotten; a terrified patient after a sleepless night is in the worst condition for an anesthetic and an operation. In such patients the author is convinced that the use of the scopolamine and morphine injections before a general anesthetic is valuable. Of the utility of strychnine before operation the author is not convinced. He admits that if this agent is to be used it should be given before shock, and not to abrogate it when blood-pressure has already fallen. Strychnine given before chloroform often makes it more difficult to obtain relaxation of the muscles, and, further, Crile's experiments indicate that strychnine given in doses which produce physiological effects promotes rather than lessens shock. Still, in some respiratory dyscrasias strychnine may assist. Alcohol administered before an anesthetic is useless and pernicious, atropine in large doses causes great discomfort, and it is very doubtful whether commensurate benefit accrues from the use of this alkaloid.

When we come to the treatment of shock which has actually developed during an operation we are upon less certain ground. Collapse may arise solely from the anesthetic or during an operation as a mixed effect. In the first case the remedy which has been suggested is Nélaton's inversion, which we now know to be valuable and to be based upon some physiological grounds. Ventilation of the lungs should be practiced by clearing the upper air-passages, initiating inspiration by Laborde's tongue-traction method, a variant upon Lord Lister's suggestion of piercing the tongue with artery forceps and dragging it forward. In either case the lower teeth should be covered with a handkerchief or layers of gauze, otherwise they will tear the tongue badly. While Professor Wood extols perflation of the lungs with oxygen by Fell's or similar apparatus, many in this country adhere to the employment of artificial respiration. Unfortunately, the method which provides the greatest lung ventilation—Schäfer's—is only applicable when the patient can be readily turned into the prone position, and cannot always be used concurrently with other procedures such as may be requisite. Intravenous injection of saline, especially with adrenalin, is the only form of injection which offers any hope of being serviceable.

The direct stimulation of the heart by means of acupuncture has not proved of any real value, and it is always open to the criticism that the point of the needle may hit off nerve ganglia and promote more prolonged inhibition. Again, we do not know definitely what is the value of cardiac massage. Professor Keen, in his monograph, inclines to believe the method holds out some chance of reëstablishing heart action, and probably many of the failures would have been successes if less delay had occurred before the method was applied. Prus's method with the more recent and simplified operations involves too much loss of time and superadded shock to be advised.

The results have not been reassuring. The abdominal route offers the best means of rapidly reaching the heart, and this plan presents the most hopeful outlook.

When concomitant exhaustion of the medullary centers complicates collapse as obtains in cases of true shock, the methods which seem to be most in consonance with our present knowledge of the causation of the condition are supplying of the nerve centers with blood by inversion of the patient, reëstablishment of respiratory function by rib-pressure, while oxygen under pressure is delivered over the glottis or through an intubation tube. In the case of abdominal section it is easy to compress the aorta and assist the heart by kneading. Bandaging the limbs with elastic bandaging over the abdomen and the application of heat undoubtedly lessen shock. Crile advocates the pneumatic suit, but of its employment he has no experience. Intravenous injections of saline are better than saline infiltration, and adrenalin, if continuously applied, offers much hope. Lockhart Mummery has seen good results from ergot, but while ergot undoubtedly assists circulation in some ways it causes pulmonary congestion, and so may in some cases take away with one hand what it bestows with the other.

Of the injection of ether, alcohol, and strychnine as resuscitatives in cases of shock the author only speaks to deprecate their employment. Digitalis he has fancied helped in some cases of laboring hearts, but Crile regards it as useless, and Victor Horsley says he has seen bad results follow its use.

From the surgical side certain points seem worth emphasizing. One sees less shock now than formerly. Excision of the maxilla, amputation at the hip, removal of the arm and scapula, when performed deliberately with arrest of bleeding as it occurs, are absolutely unlike the surgery of a few years ago, when the hemorrhage was great and the shock commensurate. To say that hemorrhage is a determinant of shock seems like enunciating a platitude, but even to-day the importance of preventing all hemorrhage needs emphasizing. The author has seen a patient bleed to death upon the operating table during an attempted vaginal hysterectomy, and the remembrance of it is not likely to be effaced.

Exposure of viscera, cooling of the intestines, the dragging upon the kidney in attempts to bring it upon the flank, and pulling upon mesenteries produce extreme shock. In the author's experience one fatality resulted in the case of such a renal operation, and he has experienced grave anxiety on account of shock due to dragging on viscera when the upper abdomen has been the seat of operation.

The fall of blood-pressure during abdominal sections is largely due to the loss of support of the abdominal parietes, and through consequent mechanical interference with the hemodynamics of the part. In the Trendelenburg position this shock is lessened, but the interference with respiration, especially in the case of obese persons, is great and sometimes produces dangerous cyanosis and respiratory inefficiency. These can usually be controlled by the free use of oxygen. The author adds in conclusion that in cases in which shock is an inevitable result of surgical procedure, he has found that since his adoption of a method whereby an exact dosage of chloroform is insured, such as can be secured by the apparatus of Vernon Harcourt, Roth-Dräger, or Dubois, and since he has employed oxygen with the anesthetic, there has been less shock, while such shock as has appeared has been more transient than was the case when other methods were pursued.

THE TREATMENT OF SYPHILIS AND PARASYPHILIS OF THE NERVOUS SYSTEM.

HECHT in an article on this subject in the *Medical Record* of June 12, 1909, states that if, for the purpose of completeness, he refers to a positive prophylaxis against syphilis of the nervous system, he must of necessity mean the accomplishment of an ideal prophylaxis against the primary sore,

with the aid in one form or another of an antisyphilitic vaccine. Whereas this seems far from realization, yet the experiments of Metchnikoff and Roux are indicative of a scientific preoccupation in this direction. Mention of their work seems in place here also, because of the calomel ointment (calomel, one part, to lanolin, three parts), which they advocate as a lubricant prophylactic to be applied to the genitalia immediately or within an hour after suspicious intercourse. The authors (Metchnikoff and Roux) remark that in their experiments this remedy has afforded immunity against primary infection, and accordingly it has been issued to the army by the Secretary of War in France as a prophylactic measure against venereal disease.

The initial lesion once acquired, nothing short of a prompt, efficient, and sufficiently long-continued course of mercury and iodides is indicated; when well accomplished, such a course of specific treatment will in the majority of cases be of avail in preventing the dire tertiary consequences to the nervous system. This, Hecht thinks, none may doubt, since it has been estimated from very large and convincing statistics that when properly treated perhaps 90 per cent of the cases get well and remain so. A retrospect of the cases which the neurologist is privileged to see forces the conclusion, however, that the cases have been treated either imperfectly, improperly, or not at all.

Hecht then asks the question: What constitutes, from the neurological view-point, the best treatment in these cases?

Extremely urgent instances aside, Hecht thinks it is the consensus of opinion amongst neurologists that the inunction method, the Schmierkur of the Germans, has on the whole given the best satisfaction in nerve syphilis. It may be inferior to the oral, hypodermic, or intravenous method in point of rapidity and cleanliness, but it fulfils most of the demands made upon it in most of the cases, is simple of application, less prone to produce salivation, and obviates gastrointestinal distress. He believes that to have the unguentum hydrargyri dispensed in an exact dosage in wax papers, with written instructions to the patient for its use, contributes greatly toward the efficiency of the method. It has been his custom to prescribe unguentum hydrargyri, 3ss to 3j, to be rubbed nightly by the patients themselves when they are able; and the specifications call for one thorough rubbing on a different, non-hairy, flexor surface each night for five nights, this to be followed by a warm, cleansing bath on the sixth, a rest on the seventh, and then a fresh series of five rubbings on successive nights, with interruptions of bath and rest as before. The number of such series required is variable, four having sufficed in some of the author's cases, and eight in others. In private practice he has found most of the patients very ill at ease over the denial of daily baths, and after making concessions has come to the belief that a short cleansing bath in the morning is no serious infraction upon the technique. In two of the considerable number of cases in his records he met with non-absorbing skins, which no amount of rubbing could affect, and after a brief trial resort was had to deep injections.

What Hecht has said of the official unguentum hydrargyri applies to the vaselin preparations containing from 25 to 33 per cent of mercury. Occasionally one meets with circumstances where it is desirable to suppress the real facts surrounding a case of lues, as in the congenital types of the disease, and here antispecifics in agreeable disguise may be given in the form of colloid calomel, used as calomelol salve or unguentum Heyden, which contains an additional 2 per cent of free mercury (Abt).

When absorption from skin surfaces has proven slow, Hecht suggests that the site of inunction be previously prepared by cleansing with soap and warm water, then alcohol or ether, and complete this toilet by the application of a tight flannel bandage over the part rubbed.

With these qualifications the endermic administration of mercury has given the

author most gratifying results. The symptoms of brain syphilis will appear less ominous, he thinks, if we appreciate that mercury in large enough doses constitutes the remedy *par excellence*. It is mercury that annihilates the spirochæta pallida, and if, as has been demonstrated, this protozoan may reside in the cerebral vessel walls of the syphilitic, then it is the mercurials that are cardinally indicated and iodides become but the essential adjuncts in the therapeutic scheme. So much depends upon the pathology in each case that generalizations as to the degree of recovery are quite difficult to formulate. The area of softening in the brain resulting from the complete occlusion of a cerebral terminal artery is not likely to be irrigated back to life, nor will the brain cells compressed in a patch of scar tissue, reminiscent of a destructive gumma, derive sustenance and potentiality from all the mercury and iodides that can be safely borne.

Small wonder then that our disappointments are not few. The lesson to be learned from this class of cases is that treatment should not only be adequate, but timely. There are types of brain syphilis which carry a patient to dissolution in spite of the most ideal therapeutical premises, but happily they are rare. In cerebral lesions the results of treatment are sometimes marvelous, but more or less complete failures are more numerous than cures. In spinal syphilis the proportion of failures is far greater than the successes.

When it seems necessary to get quick and complete control of a syphilitic lesion, initiated, for instance, by a single convulsive (epileptiform) seizure, the inunction treatment may well be waived in behalf of the more rapid administration of mercury by the deep intramuscular injection. The author has no hesitancy in stating a preference for this method at critical periods in the disease. When it is intended to establish reservoirs of mercury in the deep muscular tissues from which slow absorption takes place, the insoluble preparations, such as calomel and the salicylate of mercury suspended in sterile oil or lanolin, are used. It is maintained by Gottheil, who is the most ardent advocate of insoluble mercurials in this country, that they are free from danger, painless, and of greater convenience to the patient because of longer periods intervening between injections.

The controversy that has been waged in dermatological circles concerning the advantages or disadvantages of the soluble versus the insoluble mercurials need not receive extended mention here, but the author has found that the injection of insoluble mercurials in several cases caused quite as much pain as is experienced with the soluble corrosive sublimate. The dangers arising from the depots of mercury located in the deep tissues seem to him to be very real ones, and for this reason, he asserts, he has been content to use exclusively hypodermics of corrosive sublimate in doses varying from 1/12 to ¼ grain injected every second or third day. Soreness in the gluteal muscle masses is quite sure to follow, but at its worst it is transitory. The danger of thrombosis or embolism by penetrating a vessel is not great in these regions, but the remote possibility of so serious an accident should lead to great precaution in the technique, which it is needless to add includes rigid asepsis.

TREATMENT OF MUCOUS COLITIS.

In the *Medical Sentinel* for June, 1909, KOEHLER gives the following conclusions regarding the treatment of this obstinate condition:

1. We must eliminate as far as possible any known cause.

2. We must use the best possible means of overcoming stasis of the bowel, and procure, if possible, normal evacuation of the contents.

3. We must use necessary means to restore and improve the natural tone of the mucous membrane and muscular coats of the intestine.

Generally speaking, the large intestine should be thoroughly washed out once a

day. No good can be anticipated from enemas taken by the patient while standing or sitting on the toilet. It must be our aim to thoroughly wash away all of the mucus from the colon. To do this at least two quarts of water should be used, and the patient should assume the knee-chest or a modified Sims position. By allowing the water to flow very gradually, and by having it at about the temperature of the body, all straining is avoided, and patients quickly learn to hold a quart or even two quarts of water, and to retain it for many minutes. As a rule a considerable quantity of mucus comes away with the water. The best time to give the enema is in the forenoon, say about eleven o'clock, for by that time the bowels will usually have moved, and the action of the water upon the empty intestine will be more beneficial. Of drugs, nothing has been said, and it is a fact that they are of little value. For the anemia, iron, arsenic, and strychnine should be given, and sometimes antiseptics, such as creosote and salicylate of bismuth, are useful to allay intestinal fermentation.

As to diet, different writers entertain different, and even directly opposite, views regarding the proper dietetic treatment of mucous colitis. Some believe in the protection of the intestine as much as possible, advocating the simplest non-irritating diet, one that leaves the smallest residue. Others, among them being Von Noorden, Einhorn, Hemmeter, and Boas, do not consider the starvation diet rational; indeed, Von Noorden urges the use of a diet that is very coarse and that contains much cellulose, and fruit with small seeds and thick skins, like currants, gooseberries, and grapes. Von Noorden, in his admirable little book on the treatment of colitis, says that one goal above all must be attained: the action of the bowels must be rendered normal, not only for the time of the "cure," but for all time. With this object in view he suggests the use of a coarse diet as above outlined, to be continued several weeks. Naturally, we must endeavor to overcome the constipated habit, and in order to do this successfully we will be obliged to give each individual case careful study. Regulation of the bowels invariably leads to a rapid cure in many cases of colica mucosa.

A great many patients who suffer from this malady will come to us for treatment in a half-starved condition; and it is a good plan to start them off on a good liberal diet. They usually are badly in need of better nutrition, and we can safely tell these patients that if they can manage to gain five or ten pounds they will be cured. The author is in the habit of allowing them to eat anything they like, only restricting the diet when there is evidence of certain articles of food passing through the bowel in an undigested form. The author thinks it is best, as a rule, to urge abundant and nutritious diet, without, however, insisting that the patient eat substances that are too coarse; and he thinks it is also advisable to divide up the meals, so that five or six meals are taken daily.

Next to abundant nourishment, the methodical oil cure is of great value in the treatment of this affection. The oil should be used every other night in half-pint doses, and should be retained in the bowel over night. This is important, and if used in this way it has not only a decidedly favorable influence upon the constipation, which is practically always present in this malady, but at the same time effects a diminution or an actual disappearance of the mucous discharges.

Primarily, mucous colitis is best treated by the physician. Only after such measures as have already been described have failed should an operation be considered, when, it seems to the author, an exploratory laparotomy is justifiable. This done, and the lesion located, the treatment can be carried out with intelligence and despatch. It is quite probable that a good many of these cases are mechanical. It certainly seems reasonable to suppose that anything that would cause a change in the lumen of the gut, either from direct pressure or altered position, might cause arrest of fecal masses at certain points within the intestine.

The irritation of such lodgments might easily account for the presence of mucus and the whole chain of symptoms connected therewith. Surgery may accomplish much for the severe cases of mucous colitis. These are naturally the cases to be most readily recognized, and the most resistant to medical treatment.

TREATMENT OF ECZEMATOUS PATIENTS.

In the *British Medical Journal* of June 5, 1909, LITTLE writes on this time-worn but important topic. He advises that when we meet with a case the skin of which has a freely weeping surface, with much redness and itching, it will be found as a rule that lotions are much more sedative and come more into actual contact with the diseased surface than ointments. For such surfaces a common prescription, and one which has done good service with the author, is the following (lotio calaminæ oleosa):

℞ Calaminæ, gr. xl;
Zinci oxidi, gr. xx;
Aq. calcis, ℥iij;
Ol. olivæ, ℥j.

This should be applied with a brush or a swab of cotton-wool, or strips of thin washed "butter muslin" may be soaked in the lotion and kept in position with a light muslin bandage. It is important that the part should not be kept hot, and the covering of an inflamed surface with wads of cotton-wool and several folds of a heavy bandage—a dressing too often resorted to by inexperienced house-surgeons—does not promote the comfort of the patient or the amelioration of the disease. Many practitioners advocate the use of powders in the wet stage of eczema, but the author's experience leads him to prefer the formula he has given. When there is much pus infection of the discharge—a very frequent complication—it is often advisable to treat this feature at once, and a very useful means is to steep the part, when its position allows of this, in an antiseptic bath for twenty minutes or half an hour, drying the part carefully after with swabs of cotton-wool. The antiseptic used may be varied according to the fancy of the practitioner. The author has found chinosol (1 in 200 to 300) unirritating and efficacious; perchloride of mercury (1 to 2000 to 3000) may also be used, or this ingredient may be added to lot. calam. oleosa (½ grain to ℥vj) when an antiseptic effect is particularly desired.

When the discharge has become less free, and the diseased surface, although not dry, has ceased to pour out exudation, the continuous application of a paste is less uncomfortable a means of treatment than the application of lotions. A paste differs from an ointment roughly in the addition to the greasy base of the latter of a considerable proportion of an inert powder, which appears to exert a blotting action, on the same principle which is aimed at in the familiar resort to powdered salt to dry a recent wine stain in a table-cloth. One of the most pleasant pastes thus indicated is Lassar's paste. This is often given with varying formulæ, and it is well to particularize the composition as follows:

Zinc oxide, 24 parts;
Starch, 24 parts;
Soft paraffin, 50 parts;
Salicylic acid, 2 parts.

In acutely irritative conditions the salicylic acid is best omitted; it may be retained and the quantity increased when there is less inflammatory reaction, and where much scaling has taken place. An equally good application, perhaps even superior where there is much redness of the skin, is the following:

Zinci oxidi,
Aq. calcis,
Ol. olivæ, ää ℥j;
Adeps lanæ, ℥iij.

Dissolve lanolin in olive oil by heat, sift powdered zinc oxide into it, and whip up with lime-water.

This may be thickly spread over the affected part, dusted with a fine starch such as potato starch, and left without any other covering than the clean cotton or linen underclothing of the patient.

Other powders used in the composition

of pastes besides starch are fullers' earth, talc, kaolin, etc.

If the patient is seen in the stage of dry crusts, when the discharge has matted together the epithelial scales and débris of the surface into an impervious scab, local applications are useless until this is removed. This end may be effected by wet occlusive dressings when the adhesion of the scab is very pronounced—as, for example, on the scalp of children. Several folds of thin muslin, known as "butter muslin"—boiled in water to remove the stiffening used in its preparation and to sterilize it—are soaked in boracic acid lotion or in other weak antiseptic fluids, preferably tepid; the excess of the moisture is squeezed out, and the dressing is applied while wet and then covered with oiled silk or protective oiled paper and kept in position with a light bandage. The dressings should be changed as soon as they become dry. Starch poultices, boricated, may be used in the place of this dressing, but are not so free from risk of spreading the pus infection.

A method which the author has found very useful in treating the pustular eczema so commonly the result of pediculosis capitis in weakly children is to cover the scalp with an ointment composed of equal parts of olive oil and unguentum hydrargyri ammoniati diluti, and enclose the head in an oil-paper cap.

When the crusts have been removed, the application of an antiseptic ointment, such as unguentum hydrargyri ammoniati diluti or unguentum hydrargyri nitratis diluti, either unmixed or with an equal quantity of unguentum acidi salicylati, will usually check the superficial pus infection and reduce the part to the condition of an uncontaminated exudative or excoriated surface, which may then be treated with lotions or pastes as described above. It is often possible, and is always interesting, to watch under this treatment a successive retrogression in inverse order of the stages by which an erythematous eczematous patch becomes vesicating, exudative, and suppurating.

When the suppuration is not controllable by these methods, and the stage of "chronic pus infection" is threatened, it is remarkable with what good effect vaccine therapy can be used. The nature of the contaminating organism must be ascertained, and it is preferable that the opsonic index for that organism should be taken before vaccines are used, but even in the absence of an opsonic estimation an inoculation of the appropriate vaccine may be tentatively made. The dose used should be a very small one; in the case of staphylococcus, which is much the commonest organism found to be present, a dose of 20,000,000 to 100,000,000 will usually suffice. The clinical improvement is often striking, and in the event of such improvement the inoculation may be repeated in about ten days' time. The cases in which such inoculations are useful are also eminently those in which general management of the patient is important in the respect of diet, environment, change of air, scene, and occupation.

BALDNESS.

Cobb in an original article contributed to the *New York Medical Journal* of June 26, 1909, on this subject says that every possible moment that the head can be relieved from the pressure of the hat should be taken advantage of, especially when playing golf, or horseback riding, or when in the automobile. A great many golfers go hatless, with the idea that the hair is improved by ventilation and sunshine. Undoubtedly it is improved in this manner, but the prime secret is in not wearing the hat at all. The ventilated hat will not prevent baldness, if this same hat is worn tightly fitted down on the head. The greatest care should be exercised in selecting the right kind of hat, if such a thing as the right kind can be had, which is doubtful. All stiff, rigid hats should be very light, and one should select a size larger than the head measurement calls for, and this oversize can then be comfortably corrected by inserting a few felt strips underneath the

hatband. This gives a soft, cushion-like effect to the hatband, makes the fit just as comfortable, and in a great measure prevents the constricting zone at that portion of the scalp.

Ingenious men are continually contriving new kinds of shoes, new suspenders, and hundreds of different kinds of braces, but so far no one has taken up the idea of making a hat which will hold on the head and not blow off, and at the same time not bind the head all around like a constricting band. Some one ought to invent a hat which will prevent baldness, though the idea will probably not become popular because there is more money in hair tonics and hair restorers, and fake electric massage apparatus, than in some new kind of a hat which will prevent the disease. Hundreds of remedies are on the market which are advertised as sure hair restoratives, but not one of them will bring back one hair once the hair follicle is atrophied and functionless; nor will any of these remedies prevent the falling of hair unless the habits of the sufferers are changed. At best these remedies are merely skin irritants, which promote a slightly increased flow of blood to the scalp. Dandruff cures are mostly fakes, pure and simple. The only good in the world accomplished by these medicaments is the scalp massage indulged in while applying them, and the general practitioner should make a strong fight against their use.

The time to cure baldness is before it begins. Every man should devote a short time before he goes to bed, and after he gets up in the morning, to scalp massage, which he can apply himself. During the brisk friction he should grasp his hair in handfuls and draw the scalp back and forth many times, to make it slide over the skull. That will prevent binding and thinning of the scalp and preserve the cushion of fat on the top of the head. It will also pull out the loose hairs, which shed naturally, and which are quickly replaced by a more vigorous growth. A woman in combing her hair cannot help pulling her scalp back and forth, and this very necessity, which she cannot prevent, is the salvation of her most beautiful and most precious adornment. The hair should be worn as thick as nature will allow it, and long enough for the cut ends to extend below the hatband zone. Such a hair cut, or trim, is far more becoming than having one's hair cropped off close to the scalp like a prize fighter. Many of the electric and vacuum massage apparatus are good enough in their way, but not so good as one's own hands; though, if one can afford it, additional massage given by trained hands, or by a good machine, is a luxury that will lessen the number of headaches and wrinkles, and pay one in end results—that is, if he values his personal appearance, and certainly the bald-headed man is not handsome at his best.

But all these personal attentions will be futile unless one uses the greatest precautions in wearing the hat. Every few minutes when outside, the hat should be lifted from the head and gently replaced. The hat has a tendency to settle down on the head very snugly, and the indentation from the pressure of the hatband is quite noticeable on the forehead. Hats like the stiff straw, which are easily blown from the head, should never be worn at all, for in spite of oneself such a hat will be jammed down on the head actually tight enough to seriously impede the scalp circulation. Tie a string around the finger never so lightly, and watch the effect on the circulation in the end of that finger; in like manner demonstrate in one's own case the surprising amount of pressure exerted on the scalp by the careless manner of wearing the hat.

TREATMENT OF HEMOPTYSIS.

SQUIRE in the course of an article in the *Clinical Journal* of June 16, 1909, asserts that every case of hemoptysis should be treated as a serious condition. Absolute rest is essential during the continuance of the bleeding and for some days after all signs of blood have disappeared from the sputum. The patient should be put to bed,

if not already there, on the first appearance of blood. It used to be the constant practice to make the patient lie as flat as possible, the pillows and bolster being removed. Instead of this we now prop the patient up, raising the head and shoulders. The application of ice to the chest is also discarded, though the patient may have ice to suck. The loss of blood causes thirst, which may be relieved by sucking ice more safely and more satisfactorily than by giving large quantities of liquid to drink.

The treatment of hemoptysis must be guided by a knowledge of the cause of the hemorrhage. The author recently saw in consultation a case of severe hemoptysis in a consumptive girl, which had not yielded to ordinary treatment. He found the right chest to be almost full of fluid, and prescribed saline purgatives and diuretics, by the aid of which the pleural fluid became absorbed and the hemorrhage ceased. Since, however, the majority of cases depend upon conditions which are common to many consumptives, it is allowable to speak of a "routine treatment" for hemoptysis which will be found of service in the great majority of cases.

The following remarks are based upon the practice followed out at the Mount Vernon Hospital:

The treatment of hemoptysis may, for convenience of description, be divided into three, viz.: (1) Prophylactic; (2) acute hemorrhage; (3) subsequent to acute hemorrhage.

If the smallest amount of blood-staining is noticed in the sputum it should be looked on as a danger-signal, and the patient ought at once to be put to bed. Calomel gr. ij, iij, or iv should be given, depending on the patient, followed in the morning by one drachm or more of magnesium sulphate; if necessary this may be repeated in the day. The patient remains in bed for a couple of days, taking the magnesium sulphate each morning, and if no more staining appears he is allowed to get up, beginning with two or three hours the first day.

If the staining continues the above treatment is kept up. The amount of milk may be reduced to one pint daily, and he is of course kept in bed till the sputum is clear for at least three days.

Acute hemoptysis is treated by propping up the patient in bed. Amyl nitrite 10 to 15 minims is inhaled. In a slight hemorrhage this is usually sufficient. Smaller amounts than 10 minims do not usually have much effect. In larger hemorrhages, particularly where the nose gets blocked up with blood, it may be necessary to put from 30 to 60 minims on a piece of lint and hold it over the patient's mouth. This has in some cases been repeated, and the only complaint the patient made was that it produced a feeling of sickness.

Turpentine (about 30 to 60 minims) may be used as an inhalation where amyl nitrite is not at hand, or spirits of turpentine (10 to 30 minims) may be given internally and repeated. Turpentine is an old remedy for hemoptysis, which still remains one of the most reliable and efficacious. A little care is required in its administration, as suppression of urine may result if the drug is used too long or in excessive doses.

Morphine has been given with good results in slight cases; its action is probably due to the relief of anxiety from the sedative, with consequent quieter action of the heart.

Adrenalin (5 minims of a 1-in-1000 solution) has been injected. There seems to be considerable diversity of opinion as to the value of adrenalin in hemoptysis. It is said to be useful in cavity cases in which it is likely that the hemorrhage is due to the erosion of a medium-sized vessel. On the other hand it is said to be contraindicated when the hemorrhage is from a ruptured vessel, but is useful in congestive hemorrhage.

It is said to stimulate the sympathetic nervous system, and in this way to cause constriction of all the smaller arteries; the arterioles of the lung are not supplied with constrictor fibers from the sympathetic system, and should therefore be unaffected by adrenalin.

Thus adrenalin is theoretically distinctly contraindicated in pulmonary hemorrhage, for its use will raise the general systemic blood-pressure and leave the pulmonary blood-vessels unconstricted.

It should be a general rule that when the hemorrhage is large and a cavity is known to be present, the patient should be made to lie on the side on which the cavity is.

Subsequent to acute hemorrhage the patient is kept in bed, if possible, propped up a little. Purgatives, beginning with calomel from gr. ij to iv are given, followed up by magnesium sulphate one, two, or three times daily; the amount and time must depend on the patient's condition.

Milk, one pint, must be given in twenty-four hours, and all other fluid cut off as much as possible, and the patient fed on solids.

In some cases calcium lactate gr. xv has been given t. i. d. for three days and then omitted for three or four days. Or calcium chloride gr. x to xlv in water or milk, every four to six hours, may be given in a similar manner.

These calcium salts increase the coagulability of the blood and thus tend to check hemorrhage.

The following prescriptions have also been found useful in continuous hemoptysis:

℞ Tr. digitalis, min. iv;
Tr. hamamelis, min. x;
Tr. ergot. ammon., min. xx;
Calc. chloridi, gr. x;
Aquæ menth. pip., f℥j.

One ounce a day.

℞ Liq. trinitrini, min. j;
Spt. ether. nit., min. x;
Spt. chloroformi, min. v;
Aquæ, q. s. ad f℥j.

One ounce a day.

℞ Calc. hypophos., gr. x;
Acid. phosphoric dil., min. x;
Tr. cinchonæ co., min. xxx;
Aquæ, q. s. ad f℥j.

One ounce a day.

We sometimes come across cases in which hemoptysis keeps on with only slight intermissions for several weeks, and nothing appears to do any good.

The general principles of treatment may be summed up as follows:

Get the patient to bed, endeavor to calm his anxiety, endeavor to determine the cause of the hemorrhage, and let your selection of drugs be guided by this.

It is not wise to examine the chest too fully nor too frequently during or immediately after an attack of hemoptysis.

THE CLINICAL RESULTS OF THE PERCUTANEOUS TUBERCULIN REACTION.

Dr. Ernst Moro, of the Pediatric Clinic of the University of Munich, states, in the *Beitrage zur Klinik der Tuberkulose,* vol. 12, No. 21, that in a paper published August 1, 1907, he asserted that it is possible to produce a characteristic inflammatory reaction at the site of the inunction by means of an application of tuberculin ointment to the skin of tuberculous children. Some control experiments with children who were free from tuberculosis and control experiments with various ointments resulted negatively. A continuance of these experiments with a larger number of cases led him to the conviction that this simple test may be used diagnostically, and that it is just as specific in character as the cutaneous tuberculin inoculation of von Pirquet. This was confirmed by other observers.

Technique of the Ointment Test.—The tuberculin ointment is composed as follows:

Tuberculin, Old (Koch), 5 Cc.
Lanolin (anhydrous), 5 Gm.

He selected anhydrous lanolin as a base because the greatest concentration of the ointment was obtainable by means of this constituent; with less concentrated ointments he did not always obtain the desired result. The concentrated tuberculin ointment is of a light-yellow color when fresh, but darkens somewhat in the course of time. Nevertheless ointment that was preserved in a refrigerator fully retained its activity for several months. Ten grammes, approximately, is sufficient for one hundred tests.

A piece of ointment the size of a pea suffices for the inunction. This is rubbed into

the skin with the finger for about a minute. The diameter of the site of inunction should not exceed 5 centimeters and remains uncovered for about ten minutes until the application is dry. A protective bandage is unnecessary.

As a site for the inunction the author selected either the abdominal skin below the ensiform process or a part of the skin of the chest near the nipple.

The typical reaction consists of the appearance of more or less numerous papules at the site of the inunction. It sets in at the end of the first twenty-four hours, sometimes not until after forty-eight hours, but rarely later.

According to intensity, the writer distinguishes three grades of the reaction, namely, a weak, medium, and severe reaction.

1. Weak reaction. At the site of inunction but a few (from 1 to 10) isolated red papules appear, of an average diameter of 1 to 3 mm. This eruption disappears in a few days, without producing irritation.

2. Medium reaction. At the site of inunction many papules appear (50, 100, or more), from 1 to 3 mm. in diameter and confluent as well as isolated. Sometimes the skin surrounding the eruption is reddened. The reaction is accompanied by slight irritation, remains unchanged for several days, and fades gradually.

3. Severe reaction. At and near the site of injection numerous (50, 100, or more) intensely red, exudative papules, of varying size, put in an appearance. Sometimes they attain a diameter of from 5 to 8 mm. The eruption is always accompanied by itching. After a few days the papules dry up, but the site of inunction remains reddened and scales off. After several weeks a brownish pigmentation is noticeable at the point of application.

Generally the reaction is most pronounced after forty-eight hours. This is the most suitable time for inspection, particularly since the reaction sometimes does not appear until then.

The reaction is polymorphous and cannot always be classified according to the three groups. On the contrary, there are not infrequently deviations from the eruptions described and combinations of the characteristics of the three groups.

The Results of the Ointment Test in the Cases of 1034 Children.—The experiments to which the following table pertains extend over a period of 1½ years (July 15, 1907, until the end of December, 1908):

	Number of cases.	Reaction negative.	Percentage.	Reaction positive.	Percentage.
Manifest tuberculosis	96	17	17	79	83
Scrofula	82	11	13	71	87
Suspected of tuberculosis	450	120	26.5	330	73.6
Not suspected	406	350	87.5	56	12.5

The Reaction in Tuberculous Cases.—Of 96 children that were manifestly tuberculous 17 did not react. Von Pirquet was the first to point out that neither the subcutaneous tuberculin injection nor the cutaneous inoculation of tuberculin can be absolutely depended upon in cases in which the disease is extended hematogenously, such as cases of miliary tuberculosis, the last stage of tuberculous meningitis, and highly cachectic phthisical patients.

As will be seen from the following table, this also holds good of the percutaneous reaction:

	Number of cases.	Negative reaction.	Positive reaction.
Osseous and articular tuberculosis	23	2	21
Tuberculosis of the skin	3	..	3
Miliary tuberculosis	7	5	2
Tuberculous meningitis	7	4	3
Other forms of tuberculosis	56	6	50

The author publishes the reports of 44 post-mortems in tabulated form, and arrives at the following conclusions:

1. In all of the 23 cases in which the autopsy failed to disclose any macroscopic evidence of tuberculosis, the percutaneous reaction resulted negatively.

2. In the series of 21 cases in which the post-mortem showed the disease to be present, there were 7 negative and 14 positive reactions.

If we do not take into consideration the

cases in which the hematogenous extension of the process was disclosed by the post-mortem, the statistics are very favorable. Above all, it should be remembered that in every single instance in which the autopsy failed to show the presence of the disease the reaction proved negative.

Comparative experiments in the cases of 388 children demonstrated that the results of the ointment test are almost identical with those of the cutaneous (von Pirquet) reaction.

Moro contends that the reaction is specific and that there is no reason why the reverse should be assumed. The principal advantage of the percutaneous reaction is that it takes the place of the inoculation and is a test to which the public submits readily.

INTESTINAL STASIS AND TOXINS.

The *British Medical Journal* of June 12, 1909, recalls to our minds that two distinguished British authorities, Sir Lauder Brunton and Mr. Arbuthnot Lane, have recently made public their views on pathology and treatment of certain well-known chronic affections of the large intestine. Mr. Lane's address deserves the attention of all who practice or teach medicine—the physician, the surgeon, and the obstetrician alike—for he discusses the cause of a condition familiar to them all. He observes that while constipation is the most frequent objective evidence of unsatisfactory drainage associated with chronic intestinal stasis, it happens not uncommonly that there may be a daily evacuation or even diarrhea. He insists, after relating the general changes which aid in the diagnosis of chronic intestinal stasis, that the symptoms are due in part to interference in the normal functioning, expressed by pain, and in part to absorption of poisonous material, evidenced by toxemia. The chief toxic symptoms, Mr. Lane reminds us, are headache, a feeling of mental and physical lassitude, an inability to perform the ordinary duties of life, mental misery and distress, nerve symptoms comprised usually under the term of "biliousness," and a want of control over the temper which renders these patients unhappy themselves and the cause of unhappiness to others.

Mr. Lane's conclusion that when the stage has been reached in which owing to delay in evacuating its contents the large bowel has not only ceased to perform a useful function, but has become a source of danger, and that its removal from the drainage scheme will be of great service to the body, will seem to many very bold, but if the long catalogue of evils which he attributes to intestinal stasis and the consequent absorption of toxins is proved, then it is obvious that the drastic remedy he advises must not be ruled out of court merely because of its boldness. Sir Lauder Brunton in a recent paper insists on the importance of intestinal toxins produced and absorbed as a consequence of chronic colitis. He tells us that he has lately been struck by the frequency with which patients suffering from chronic colitis complain of being always tired—a symptom which he has found to be diagnostic in more than one doubtful case. We are here reminded of the feeling of mental and physical lassitude which Mr. Arbuthnot Lane signalizes as an essential indication of chronic disease of the large intestine. Mr. Lane ascribes the lassitude to toxic agencies; and Sir Lauder Brunton says that whereas he was once inclined to attribute the lassitude to the absorption of peptones or albumoses from the intestinal canal, the recent researches of Weichardt have led him to the conclusion that the weariness is more probably due to toxins formed by microbes. During the breaking down of albuminous molecules toxins may be produced possessing a special property of causing fatigue.

Weichardt has shown that fatigue toxins can be expressed from exhausted muscles and made to produce fatigue in other subjects into which they are injected. On the other hand, fatigue antitoxins may be produced in the same way as other "anti"-bodies—by the injection of small quantities into a horse, the dose being gradually increased until a great power of resistance has been obtained. Weichardt asserts that

fatigue toxins can be completely antagonized by the administration of fatigue antitoxins, which afford the tissues a far higher degree of resistance to fatigue than they normally possess. Sir Lauder Brunton suggests that Weichardt's researches may solve the mystery of beef tea and beef juices, which contain little nutritive material, but yet possess a very considerable stimulant action. The meat juice, according to Weichardt's teaching, supplies a fatigue antitoxin, and is not simply a mild, second-rate nutrient, for its active power in removing or preventing fatigue seems to be altogether out of proportion to its nutritive value.

Sir Lauder Brunton admits that he can give no rules for the administration of medicaments which will bring about the development of fatigue antitoxins, but he thinks that the introduction of large quantities of the lactic acid bacillus into the intestine, as suggested by Metchnikoff, acts by destroying the bacilli which produce fatigue toxins. As a practical physician, the same authority dwells on the advantages of eliminative, as opposed to tonic, treatment in cases of chronic colitis. Iron and strychnine often fail, he reminds us, adding that Byron found a dose of Epsom salts more stimulating to the brain than a glass of champagne. Old-fashioned purgatives remove the sense of weariness present in many cases of intestinal catarrh, a fact quite familiar to the experienced practitioner. A small dose of castor oil, repeated every morning, is, Sir Lauder Brunton thinks, the best remedy for chronic colitis, although a subsequent course of intestinal irrigation at Plombières, or elsewhere, may be necessary. As Sir Lauder Brunton refers to Byron, we wonder what that noble but wayward bard, who sang of those sodas and magnesias which form "that bitter draught the human species," would have thought and written of the possible developments of fatigue antitoxins, a tragic theme to all who with unbashful forehead woo the means of weakness and debility, as Adam says in "As You Like It." Perhaps we may be prophets, and foresee a race who, with foreshortened colons, will forswear alcohol and carouse with elegant brews of fatigue antitoxins, abusing the latter as much as our own forefathers spoiled themselves with the former.

A FATAL CASE OF POISONING BY ATOXYL.

The occurrence of toxic symptoms after the use of atoxyl has been observed and recorded in a considerable number of cases, the most serious being those affecting the eyes, such as retinal hemorrhage, amaurosis, and optic atrophy. Koch observed 22 cases of blindness after its use in the treatment of 1633 cases of sleeping sickness. In addition to these ocular effects, various symptoms have been frequently observed, including malaise, attacks of vertigo, insomnia, dryness and irritation in the throat, pains in the limbs, and various paresthesiæ. In some cases slowness of the pulse and even anginal attacks have occurred, while anorexia, vomiting, diarrhea, and jaundice indicate its effects on the digestive system. Albuminuria, nephritis, and painful micturition have also been described, as well as various cutaneous lesions.

These toxic effects are analyzed in a paper (published in the *Münchener Medicinische Wochenschrift* of May 11) by Dr. Heinrich Schlecht, of Professor Strümpell's clinic at Breslau, and details are given of a case in which the administration of atoxyl was followed by death. The patient was a butcher, twenty-eight years of age, who developed a chancre in November, 1907. Apart from an attack of enteric fever ten years before he had always had good health. There was no history of epilepsy or of alcoholism. Ten weeks after the development of his chancre a maculopapular rash appeared with condylomata at the anus. He was then treated by mercurial inunction for three weeks. A little later he was given 5 grammes of potassium iodide daily by the mouth and received four injections of 0.1 gramme of salicylate of mercury subcutaneously. After a further interval of six days, during which the patient felt well, atoxyl was given in four separate doses of

0.6 gramme spread over a period of eight days, the total quantity given being therefore 2.4 grammes. The day after the last injection the patient became seriously ill with malaise, anorexia, vomiting, and sudden rise of temperature. Within a few hours epileptiform attacks supervened, with tonic and clonic spasms and complete loss of consciousness. The pupils were sometimes contracted, sometimes dilated, and insensitive to light. The tendon reflexes, which were at first abolished, later became exaggerated, and a Babinski reflex was obtained on both sides. A high degree of cyanosis supervened, respiration was sometimes deep, at others rapid and superficial, while during the fits breathing would cease for considerable periods, to be followed by markedly dyspneic respiratory movements. The heart's action became very weak, the pulse rapid and small. The urine contained albumin and casts. Examination of the blood showed a marked leucocytosis and some polycythemia. Death occurred in one of the epileptiform attacks.

At the necropsy the heart muscle showed degenerative changes, and there was marked edema of the lungs. The liver showed fatty and necrotic areas, and there were signs of marked destruction of red blood-corpuscles both in the liver and spleen. The kidneys were large, soft, flabby, and congested. In the central nervous system the only changes observed were local proliferations of the neuroglia in the cortex and recent degenerative changes in the vessels.

Dr. Schlecht inveighs strongly against the use of atoxyl for spyhilis, blood diseases, and skin lesions, for which ordinary methods of treatment are available. He suggests that there may be in some persons an idiosyncrasy to atoxyl, since atoxic symptoms are on record after comparatively small doses, and he recommends the utmost care in its use. He gives no details of the source of the atoxyl used in the case he records. From the literature it would appear that some samples of atoxyl more often give rise to toxic symptoms than others, and it is possible that an impurity may be the cause of some of the serious effects observed. It is obviously of the utmost importance that the substance should be free from arsenates, and that it should contain its arsenic in the form of arsenite.

Dr. Schlecht's case is a further indication that atoxyl is a drug which must be used with great discrimination, and that its effects must be very carefully watched.—*Lancet*, June 19, 1909.

REMOVAL OF SUPERFLUOUS HAIRS BY IMPROVED METHODS.

PIRIE in the *Lancet* of June 19, 1909, expresses the belief that the removal of superfluous hairs by means of electrolysis is a very satisfactory minor operation when well carried out. Frequently, however, a small scar is produced at the seat of operation, and in order to avoid such a scar a simple precaution is necessary which is not mentioned in works on medical electricity. Like all other operations, it must be performed intelligently and not blindly, without regard to the principles of electricity, anatomy, and physiology. It is often spoken of as if the root of the hair was burned by the electricity as a nevus is burned by a cautery point. This is quite a wrong view to take of the operation. The destruction of the root of the hair is caused by an alkali, generated at the positive and negative poles, respectively.

1. If a needle which is not acted on by acids is used, such as gold or platinum, and it is connected to the negative pole, then nascent chlorine appears around the needle with the formation of hydrochloric acid and destruction of the hair bulb. It is as if a minute quantity of free hydrochloric acid had been injected into the hair follicle.

2. If a needle which is acted on by hydrochloric acid is used, such as zinc, the acid attacks the zinc, forming chloride of zinc, and this goes into solution; thus both hydrochloric acid and zinc chloride are set free in the hair follicle. In this case a little of the zinc remains in the follicle, but is not driven into the surrounding cells, and therefore

there is no staining of the skin where a corrodible needle is used, provided it is connected to the negative pole.

3. If a non-corrodible needle such as gold is used for the operation, and it is connected to the positive pole, free sodium is liberated at the surface of the needle; this at once combines with the water of the tissues to form caustic soda, which in turn attacks and destroys the root of the hair.

4. If a corrodible needle, such as a steel needle, be used and be connected to the positive pole, free sodium is liberated at the surface of the needle, which at once becomes caustic soda, which attacks the iron, forming oxide and hydrate of iron. This remains in the hair follicle and therefore does not stain permanently the skin. But there is a much more important action going on in this case which does stain the tissues, and that is the transport of iron ions from the steel needle into the actual cells of the skin, where they are fixed and remain as iron oxide or rust. For this reason a corrodible needle must never be attached to the positive pole in this operation. No pigmentation is therefore produced if one uses a corrodible needle, provided it is connected to the negative pole.

When the current is turned on, and the needle which is attached to the negative pole touches the skin, acid formation at once begins. As the needle sinks into the hair follicle the acid also penetrates deeper till it reaches and destroys the bulb of the hair. The needle must be left a sufficient length of time to allow enough acid to collect in the follicle to destroy the root of the hair. But while the root is being destroyed, so is the skin around that part of the hair which is embedded in the upper layer of the skin. It is quite unnecessary to destroy more than the root of the hair, and this destruction of surrounding tissue is the cause of future scarring. This can easily be avoided by a simple method of insulating the needle to within a sixteenth of an inch of its point. When a needle is so insulated and thrust into the root of the hair, the free acid attacks only the root and therefore there is no scarring left after the operation. Patients have remarked on the decrease in the amount of reaction following the operation when the insulated needle has been used, and it is very striking to an operator who uses an insulated needle after being accustomed to a naked needle.

The method of insulating the needle is very simple. In the first place, the author prefers to use a fine wire in place of a needle. He finds the wire supplied with the finest hypodermic needle useful for the purpose. It is finer than a No. 12 sewing needle, which is the finest sewing needle obtainable. Another advantage of this wire is that it has not a sharp point, and therefore is not so likely to leave the hair follicle and make a false passage. If too much force is used in introducing the wire it bends and makes further progress impossible. By its extreme fineness it finds its way down by the side of the hair, and in the case of hairs whose roots take a curved course in the skin it follows the curve instead of making a false passage, as the finest sewing needle does. Unless the point of the needle reaches the actual bulb of the hair the operation is useless. Therefore, a fine wire with a blunt point is better than a fine sharp needle for the purpose.

The wire should be insulated as follows: Hold a piece of shellac in the left hand and the wire in the right. Heat the wire to redness in a Bunsen flame, and while red-hot embed it quickly in the shellac, all except its point, and lift it out again quickly, thus leaving a sixteenth of an inch uncovered by shellac. There is thus a thin layer of shellac on the wire, and it fits it so well that no irregularity appears to the naked eye in the outline of the wire as compared with its former state. The tip of the wire must not touch the shellac. One-sixteenth of an inch remains naked at the tip of the wire. The wire cuts into the shellac when it is red-hot as one cuts a banana with a knife.

To sum up, the essentials of good results in this operation are: (1) Connect the needle to the negative pole; (2) use a fine stiff wire as a needle (the wire supplied with the finest hypodermic needle is a suit-

able one); and (3) insulate the wire so that only the last one-sixteenth of an inch supplies the current. The advantages of this method are two—no scarring after the operation, and a lower percentage of regrowth of hairs.

THE STANDARDIZATION OF DIGITALIS.

In the *Lancet* of June 19, 1909, HOUGHTON, whose work on this subject is so well known, reaches the following conclusions:

1. It has been shown by numerous laboratory workers that it is impossible to determine the value of the heart tonics of the digitalis series by chemical assays.

2. It is a well-recognized fact that the toxicity of these products warrants that every effort should be made to present preparations of them of as uniform value as possible.

3. Experiments upon animals have demonstrated conclusively that the variation in the physiological action of some of these products is extremely great.

4. It is urged that there be appointed an international committee to determine and recommend the best method of physiological assay of the heart tonics of the digitalis series and an international standard "heart tonic unit," to express the physiological value of the pharmaceutical products of this series.

5. The author puts forth a method of physiological assay, which is the result of nearly fifteen years of laboratory study, for consideration as a possible solution of this problem.

INFECTIVE INFANTILE ILEOCOLITIS.

In the *Australasian Medical Gazette* of May 20, 1909, BUSH speaks of the lactic acid bacillus method of treating this state.

The lactic acid treatment may be used in several different ways, and prepared by different agents. The process was allowed to proceed for 9 to 12 hours in milk diluted 1 in 4. There was usually clotting in this time, and the acidulated milk seems to be taken very well by children. If considered necessary, the time may be extended. The author has tried another way in cases in which the above did not seem to suit entirely. The milk was first peptonized, and then clotted milk whey was added to the required proportion. These are the only ways in which the author has administered this treatment, but it may also be given in the form of pure lactic acid culture as a medicine in prescribed doses, but it seems better to give the curdled milk, as by this means food and medicine are conveniently and pleasantly combined, and greater facility is afforded of introducing a larger quantity of the curative agent.

Concerning drug treatment, the author believes no hard and fast rule can be adhered to. Individual cases, of course, require particular treatment, but he freely confesses that in his hands he has found no remedy or combination of remedies consistently effective. A form of treatment successful in one instance utterly fails in another. He has tried to use the Pharmacopœia intelligently, he states, but has found it wofully lacking in many, indeed in the majority, of the severe cases. He has used many drugs and combinations of them on a number of cases, giving each a sufficient time to work its way, and has finally come down, or back, to a mixture of magnesia sulphate and corrosive sublimate, with the occasional administration of a dose of castor oil, and careful dieting, pinning most faith to the last. Complications must be met with the appropriate remedy, and should straining be marked or persist, he uses opium in small doses. Bismuth, as a routine, is absolutely useless, and, indeed, he thinks harmful, causing irritation. It is passed in the motions in a practically unchanged condition, often resembling curds, and must surely cause irritation. But he does use it in another way. Bismuth is generally regarded as acting mostly as a mechanical protection and astringent. But he believes it has a deeper action than this. When it does any good it is passed in the black condition. Here, again, it would seem that there is some interaction between the agent and the natural intestinal secre-

tion, and in the absence of the latter the bismuth is powerless to act. The change is evidently some interaction with sulphur, and taking this view he has tried giving sulphur and bismuth in two mixtures, the former preceding the bismuth, generally, he admits, with little or no result.

With patients on the treatment mentioned above, he gives an occasional dose of bismuth simply as a test, and when it is turning the feces black he gives it as treatment, and has generally found it successful. But the trouble is that it is so often not turned black.

Without going into more detail on drug treatment, there is another measure the author mentions in conclusion. He refers to lavage of the rectum. It may seem dreadful heresy to say it, he asserts, but he does say that he does not place much confidence in it. When he was at the Children's Hospital, they regarded this as one of the most important forms of treatment; but at home in private practice he has found it disappointing, and in some cases distinctly irritating. Some cases seemed to derive benefit, of course, apparently more particularly from the general effect of absorption of fluid. Plenty of boiled water to drink should be allowed, and if the indications point to the need of alcohol, he uses it in appropriate doses.

THE OPEN-AIR TREATMENT OF PNEUMONIA.

In the *Wisconsin Medical Journal* for June, 1909, PATEK tells us that although the latter-day open-air treatment of pneumonia is too recent to permit the massing of extensive statistics, some of those recorded are significant. Thompson reports having treated at the Bellevue Hospital in 1906, 128 cases of acute lobar pneumonia in wards whose temperature was often as low as 35 to 40° F. Of this number 47 (36.7 per cent) received absolutely no medication. A very large percentage of his cases were alcoholics, and yet his results were astonishingly favorable.

An interesting testimonial comes from P. Carr White, an Englishman in the Indian Medical Service. He writes: "In that part of India there is frequently, in the cold weather months, a severe infectious type of acute pneumonia with a high mortality. The infectious character may be gauged by the fact that it is advisable to change the orderlies attending on the sick at least every forty-eight hours, otherwise they are liable to contract the disease. In one native regiment an epidemic of this disease occurred, and the cases were treated in a large well-built ward with two stoves with fires day and night. The ventilation was very good in the day, but at night, as the temperature often fell to 32° F. or lower, the men, contrary to orders, shut up the windows and doors, and in consequence the ventilation became defective. The mortality amongst these cases was high. Owing to want of accommodation the author had to choose between tents or an old broken-down, disused barrack; tents are difficult to ventilate, as the men can close every available air inlet, so the writer selected the latter, the doors of which did not fit, the windows were broken, and there was in consequence a very free current of air throughout the entire building. The change was most marked, though no records were kept. The author does not recall a death occurring in this barrack, which at any rate, according to his former ideas, was not an ideal place in which to treat pneumonia. The men themselves quickly noticed the difference, and in spite of having no fires and less comfort, asked to be treated in this building."

George E. Rennie, of Sydney, N. S. W., treating of the favorable effect of the open-air treatment upon pneumonia patients, makes this significant statement: "Probably our more severe climate may have conduced to the success thus far attained, but considering the immense benefits which are well known to accrue from this method of treatment when applied to pulmonary tuberculosis, even in the old country, I feel sure that its adoption in cases of acute pneumonia would result in a considerable reduction in the mortality."

Stephen Harnsberger, of Catlett, Vir-

ginia, records a successful experience covering twenty-nine years. He believes that the greater fatality of pneumonia to-day over what it was one hundred years ago is due to lack of open air; that our forefathers lived in the open air during the day and slept in the air during the night—that is, their houses were so constructed that ventilation was constant; dwellings were not hermetically sealed as they are now, and the air was not vitiated by modern methods of heating and lighting.

Now, in what particular way, and how and why, does the open air, cold air if you please, prove of benefit to the pneumonia patient, be he suffering from bronchial pneumonia or lobar pneumonia? It is a fact that the distress signals in pneumonia are due either to the intensity of the pulmonary invasion—evidenced by the symptom we call asphyxia—or to failure of the heart. If, therefore, there is a means of preventing the occurrence of these symptoms, or of mitigating them when present, then have we accomplished the task set before us in a given case. The advocates of the cold-air treatment make this bold claim, and it is a claim amply justified by their experience. In any illness it is well to consult the patient's personal comfort and be guided by it, other things being equal. So, be humane enough to give a pneumonia patient the choice between a cold room and a warm one, and he will almost invariably choose the former. The reason is obvious: he finds it more comfortable and refreshing; the cold air is a respiratory stimulant, and he therefore breathes more freely; it contains little vitiated air, and therefore contributes more to the aeration of the blood; and by improving and facilitating the interchange of gases it relieves the toxemia and improves markedly the heart's action. Thus all resultant symptoms of the pneumonia are less intense; the breathing is less labored, the cyanosis less marked, the pulse stronger and slower; the delirium gives way to restfulness, the appetite improves, and convalescence is more rapid. Those who have not given themselves the opportunity to watch this change will be disinclined to credit the results obtained. But if they see these symptoms repeating themselves in case upon case, the conviction of their truth must be borne in upon them. Time and again, the author states, has he witnessed the intense suffering of patients, as indicated by increased dyspnea and cyanosis, when for some reason or other they were taken from their cool, fresh atmospheres into warm rooms. And as often have those old enough and able to express a wish clamored for the return of the open window, and those too young to say the words shown their gratitude in symptoms that were unmistakable. What better evidence of the efficiency of this mode of treatment can be advanced than that of the nurses in attendance? They invariably become enthusiastic over the results and are outspoken in their conviction of its superiority over other methods, despite their own personal discomfort in having to continually remain in the cold.

MATERNAL MILK AS AN IMMUNIZING AGENT TO THE NURSLING.

In the *University of Pennsylvania Medical Bulletin* for June, 1909, SAJOUS reports upon this subject and concludes that the prevailing custom of considering only the nutritional values of milk and other forms of food used in the artificial feeding of infants is partly responsible for the great mortality that prevails among them, especially during the first year.

The protection of the infant against infection depending in no small degree upon bactericidal and antitoxic substances physiclogically supplied to it in the maternal milk, the protective properties of any artificial food should receive attention as well as its nutritional values.

All phases of the problem indicate that, of the various modes of feeding, direct maternal nursing affords the greatest protection to the infant; it follows, therefore, that we should do all in our power to promote the abandonment of artificial feeding and thus reduce greatly the mortality among infants.

"CLEAN MIDWIFERY" IN GENERAL PRACTICE.

In the *British Medical Journal* of June 19, 1909, GREGSON states that for five years no doubt had ever entered his mind as to the efficacy of mercury perchloride as a hand and labial disinfectant and a sure preventive of puerperal fever; but in December, 1905, a midwife sent for him to attend one of her septic cases, which proved fatal within a week, and after that, though none were fatal, several of his own had unpleasant rises of temperature. It seemed as though the infection could not be got rid of, so he determined to use rubber gloves.

At first they were carried in a glass bottle containing glycerin and carbolic acid diluted ten times, at one end of his bag; a yard of cotton-wool was also put in, and the midwifery forceps transferred to a sterilizer. The nurse was required to find an enamel pan and some soda to boil the gloves, a bowl for lysol to transfer them to, another for perchloride to wash the labia with, as the lysol is too irritant, besides the usual wash-basin, the whole making a somewhat formidable array.

Before long, however, a case occurred in which elaborate preparations were out of the question; even a pint basin for the perchloride had to be borrowed—just such a case where perfectly clean midwifery would be held an impossibility. In these poor houses the gloves are put into the kettle and transferred to the mercury solution instead of to lysol, and this is found to do quite well. Of course, the soda is omitted, and then the gloves must be boiled in it at home to remove any trace of blood or fat before being used again; whereas this is usually done at the patient's house, the pan being kept at one side throughout the case and used repeatedly.

The gloves having been boiled, one's own hands are washed with soap and water, all the folds of the patient's genitals and adjacent parts cleansed with perchloride, and the vagina swabbed as thoroughly as possible with cotton-wool wet with the same solution and never dipped into it a second time; then one's hands are sterilized in the ordinary way and the gloves put on without filling with water, a pad of cotton being used to work them on, and the examination made without any lubricant except the one-per-cent lysol when convenient, contamination from the anus being prevented by keeping a pad of dry wool over it. The patient is always instructed to have an enema before she sends for him, but too often she omits it. If during the vaginal examination the rectum is found overloaded and the os not fully dilated, an enema is given.

If instruments are found to be required, boiling water is poured into the tin, the gloves put in, and two-per-cent lysol added. The whole is then boiled for five minutes with the spirit lamp, half the solution poured into a jug as a reserve, and cold added to the tin.

Such a change in routine had its disadvantages. Tactile sensation required re-educating, but half a dozen cases were sufficient to complete this. The waste of time was at first about an hour, but now it is only fifteen minutes, and is fully compensated for by not having to give intra-uterine douches later. If any rotating or turning is required, lysol makes the gloves too slippery, and perchloride must be used instead.

THE EFFECT OF ATOXYL ON THE EYE, BEING A CLINICAL AND EXPERIMENTAL STUDY.

KEY in the *University of Pennsylvania Medical Bulletin* for June, 1909, comes to the following conclusions:

1. Atoxyl no doubt is of distinct therapeutic value, as shown by the clinical results reported.

2. The drug has a treacherous toxic action in the organism, as indicated by experiments and clinical evidence.

3. The most interesting and prominent effect of its toxic action is manifested by the production of amblyopia.

4. Atoxyl amblyopia is the result of optic nerve atrophy, with primary involvement of the retina, though in certain cases central lesions, shown experimentally and apparent clinically, are very suggestive indeed.

THE PREVENTION OF PELVIC DISEASE IN WOMEN.

In the course of an article in the *Australasian Medical Gazette* of May 20, 1909, HARDIE in writing on infections by the gonococcus says:

Let us suppose that a woman has contracted the disease, and that its treatment has to be considered. What the author advocates for man applies with equal force to woman, applies, indeed, with greater force, because of the greater difficulty in establishing a cure, and the greater risk of subsequent complications. Here again the practitioner is not often consulted until the disease has extended into the uterine cavity. He is convinced that, unless the symptoms are very acute, many women have gonorrhea without consulting a medical man at all, and seek advice only for some of its remote effects. This is all the more to be deplored, as, if neglected, it is almost an impossibility to cure the disease.

If the case be seen in the early stage, it is always essential that the disease should be treated thoroughly, and yet under ordinary conditions we know that this is not, and cannot well be done. We all know how this is usually done, by the patient visiting her medical attendant at irregular intervals, and doing her best to carry out his instructions at her own home. The treatment may possibly be successful, but probably not. No doubt the acute symptoms disappear, and the discharge may also apparently disappear. Taking it for granted that she is cured, the patient gives up treatment, and no more is heard of her until, in the course of time, it may be years, she may seek advice for some pelvic disease that is removable only, and perhaps not even that, by the surgeon. In the meantime she may have given gonorrhea to another. This is a highly unsatisfactory state of matters, and the author asks us to consider if anything, and what, may be done to obtain better results.

Assuming still that the case is in the acute stage, and that the disease has not affected parts beyond the reach of medical treatment, and assuming also that the treatment prescribed is correct, failure can result only from want of proper application of treatment, or want of perseverance in treatment, or, what is more likely, from both.

Failure from lack of perseverance is largely due to ignorance on the part of the patient. Infected women, as the author has indicated in the case of men, must be educated up to the point of fully realizing the gravity of the disease, and the importance of being, if possible, absolutely cured. Once this is achieved, one could imagine they would persevere with treatment as long as is desired. Failure from imperfect application of treatment is a more difficult matter to deal with, as it seems quite impossible for the patient herself to carry out the medical instructions in a satisfactory manner in her own home. Yet she naturally objects to another doing what she can do but imperfectly herself. Here is a dilemma, the solution of which bristles with difficulties all round. If the medical man suggests a nurse or private hospital, objections are at once, and for obvious reasons, raised, and if, as an alternative, he proposes to take on himself work that really belongs to another, he accepts the position not from choice, but from a sense of duty.

Briefly put, gonorrhea is a common cause of pelvic disease in women, because in some cases it receives no treatment whatever, because in others it is too far advanced before medical advice is sought, or if not too far advanced there is imperfect application of treatment, and because the patient, being ignorant of the issues involved, gives up attendance and treatment when the cure of her disease is more apparent than real. Some of these obstacles the medical man cannot, for the present, overcome, but if he conveys to those patients who suffer from gonorrhea a realization of its possible consequences if neglected, the time will come by a process of direct and indirect education by way of compound interest, when women, who become the victims of it, will seek advice early, and will not give up treatment until authorized to do so by their medical adviser. Knowledge of the possible

sequelæ of gonorrhea on the part of women seems to be the key-note, if not of its prevention, at least of the successful application of treatment in the future, before it has invaded the inner pelvic organs.

We are sometimes asked by a man or woman who has had gonorrhea or syphilis whether, and when, he or she may safely marry. So far as syphilis is concerned, Hutchinson considers marriage allowable after a period of two and a half years, provided the patient has received a thorough course of treatment during that time. Kelly and others advise a period of four years, during the last twelve or eighteen months of which there must be no manifestation of the disease. The question is one of grave concern, because, important as syphilis is from the personal aspect, it is still more so from the hereditary point of view. A man who trifles with syphilis, and does not persevere with the treatment prescribed, incurs a responsibility that only a lunatic would care to bear, and for which he should be segregated as a menace to the well-being of the race.

As regards gonorrhea the question is also not easily answered, on account of the difficulty of definitely declaring that the disease has been finally eradicated. No hard and fast period of time can be approximately fixed upon, but if the medical man is satisfied, after naked-eye and microscopic examination, that the disease appears to be cured, and allows a further probationary period of, say, six or twelve months, during which quarterly examinations are made with negative results, the author thinks he or she may safely marry. Experts alone can tell us when and how examinations should be made. One would imagine they should be made under conditions that are likely to bring a latent disease into activity, such as, in woman, just after the menstrual period, and in man after he has had, by special advice, a glass or two of whisky. We are also told that the smears should be taken not only from the os uteri, but from the glands of Skene and Bartholin in woman, and from the glands of the urethra in man.

THE OCCURRENCE OF ACETONURIA FOLLOWING ETHER ANESTHESIA.

In an interesting study of this subject in the *University of Pennsylvania Medical Bulletin* for June, 1909, HAMBLEN states there can be no doubt that etherization itself will produce acetonuria in a certain number of cases, but it also seems very probable that there are a good many other contributing factors which must be taken into consideration, such, for example, as prolonged starvation before and after operation. In a large series of observations made in a children's hospital it was found that boys were more subject to postanesthetic acetonuria than girls. The length of the anesthesia, the amount administered, and the duration of the operation seem to play no part in the duration and severity of the symptoms, but the method of administration of the ether seems to be of considerable importance, as a comparison of figures will show. In 120 cases etherized by the "cone method," acetone was found in 88.5 per cent, while in the same number of cases in which the drop method was used, only 26 per cent showed acetonuria. It would therefore seem perfectly logical to consider the "drop method" the best. Several tests have been devised from time to time for the detection of acetone in the urine. Legal's and Lieben's tests were considered the best for a while, but they required too much time in carrying them out, as the urine was supposed to be first distilled; and they were also not absolutely accurate. The best test at the present time is considered to be Lange's, and it has to its credit the fact that it is accurate, simple, and only requires a few seconds in its performance. The method consists in taking 15 parts of urine, 1 part of glacial acetic acid, a few drops of freshly prepared sodium nitroprusside solution, and shaking; then float upon this a layer of ammonium hydroxide, and if acetone be present a beautiful purple or violet ring appears at the zone of contact.

In a series of 60 cases operated upon at the University Hospital, in which ether was the anesthetic employed, acetonuria oc-

curred in 30 (or 50 per cent of the cases) after operation, and it was also present in 11 of the cases before operation, but in none of these 11 cases were any symptoms of acidosis noted. However, it may be remarked that 7 of these cases were appendicitis, including the chronic, acute, and gangrenous types, so when we consider that there were only 10 cases of appendicitis in the entire series, it at least suggests the possibility of a relation existing between acetonuria and appendicitis, but, of course, it would not be safe for us to draw any definite conclusions from such a limited number of cases. However, there would at least seem to be an open field for work along this line, and if acetonuria should be found to be more or less a constant accompaniment of appendicitis, it would certainly be a great aid to diagnosis, especially in obscure cases.

This leaves 19 cases out of 60 (or 31.6 per cent) which showed acetonuria after and not before operation, thus showing conclusively that ether anesthesia is a very real cause of acetonuria in about one-third of all cases. These 19 cases included carcinoma, angioma, tuberculosis, adenitis, bone operation, varicocele, hernia, hydronephrosis, uterine fibroids, osteosarcoma, and abscess.

When acetonuria occurs after operation it usually persists for about three days, although sometimes it may last much longer. However, six days was found to be the longest time after operation in which acetone persisted in this series of cases.

The value of acetonuria is being recognized more each day, but of course the important thing to the patient and the surgeon lies in our ability to suggest some means by which acetonuria may be avoided or how the condition of acidosis may be treated after it has actually appeared.

As to prophylaxis, considerable can be done; in the first place, the prolonged starvation of patients before operation should be avoided as much as possible, and except in abdominal work, where there is distinct contraindication, a little light broth given three hours before operation is of distinct advantage.

In the second place, trauma and exposure during operation should be avoided as much as possible.

As to the curative treatment of acidosis, it is based upon a perfectly rational foundation, for, as has already been shown, there is an excess of acid in the blood, therefore the object of treatment is to eliminate the acid by purgation and sweating and to neutralize the acid remaining by the administration of some alkali—preferably sodium bicarbonate, gr. x, every two hours. If the condition is severe, stimulation by alcohol, and saline subcutaneously or by rectum, must be carried out. In spite of this the treatment of many cases is disappointing, probably because too much damage has already been done by the acetone bodies in the early stages of acidosis, or because the alkali does not reach the tissues where the acetone bodies are formed and where the damage is done.

THE INTRAVENOUS INJECTION OF ADRENALIN IN CIRCULATORY DEPRESSION.

In the *Münchener medicinische Wochenschrift* of June 15, 1909, JOHN contributes a paper upon the intravenous injection of adrenalin in severe cardiac and muscular depression. The conclusions he reaches are as follows, viz.: In severe cardiac and blood-vessel collapse, the conditions in which strophanthus, caffeine, and camphor have usually been relied upon, the intravenous injection of from 10 to 15 minims of adrenalin solution, undiluted, or with half an ounce of physiological salt solution, will often produce life-saving results.

TREATMENT OF IONIZATION OR CATAPHORESIS.

The *Bristol Medico-Chirurgical Journal* for June, 1909, contains an article on this subject by TAYLER and JONES. They describe their method as follows:

The requisite instruments are a constant current battery capable of driving a current of 30 to 40 ma. through the human body, a

milliamperemeter capable of reading the above current, and suitable electrodes and connecting wires.

The author prefers his battery to be made up of Leclanché cells, as he finds these are the easiest to clean up and replace in case anything goes wrong when far away from instrument makers. The milliamperemeter he prefers is the variety in which the needle floats in spirit, as this saves all troublesome leveling of the instrument or battery. The electrodes must be cut to shape, so as to just overlap the edges of the surface to be treated. The larger the indifferent electrode the better, but he finds a cylinder of sheet zinc one inch in diameter and covered with four thicknesses of flannel very useful, as the patient can hold it in a basin of water, thus preventing the annoying drying which so often takes place when a pad on the back is used.

We will suppose that a rodent ulcer of the face is to be treated. The patient is placed lying on a couch, with the head supported so that there can be no jump when the current is switched on. Any greasy application which may have been put on the ulcer and surrounding skin is carefully removed. A suitable sized electrode of zinc is selected and carefully polished. The author finds the best way to arrange his electrodes is to have a holder made from a bit of brass tube of a size just sufficient to allow a No. 7 brass screw to slip into it and be firmly held. To the head of this screw a bit of ordinary roofing zinc, which can be easily bent to shape with the fingers and cut to size with ordinary scissors, is soldered. Thus, at practically no expense any number of electrodes can be quickly made.

A pad formed of at least sixteen thicknesses of lint is then soaked in a two-per-cent solution of zinc sulphate, and laid over the ulcer; the polished electrode is placed and held on this with gentle pressure, after having been connected with the positive pole of the battery. It is well to test the poles of the battery pretty often, as the shifting of a current reverser in dusting is easily overlooked. A bit of wet blue litmus paper is reddened at the positive pole.

The patient grasps the pad connected to the negative pole, and the current is slowly switched on. It is now necessary to pay attention to the dial collector, and see that the collecting arm works smoothly and touches the record stud before it quite leaves the first, so that the rise of current takes place without any jerk. For the same reason it is very essential to see that all connections of battery cords and electrodes are quite firm. Professor Leduc insists that all connections should be soldered.

The absolute strength of the current must be fixed by what the patient can bear, but may be taken to be 2 or 3 ma. per square centimeter of surface.

The length of the sitting is also fixed by the tolerance of the patient; but supposing the current to be about 3 ma. per square centimeter, ten minutes to a quarter of an hour will probably suffice.

It must be borne in mind that the quantity of zinc driven in, and the depth to which it is driven, will vary directly with the time and current strength.

After an application the author leaves the pad which has been used during treatment as a dressing, partly to avoid disturbance and the providing of another dressing, and partly with the idea that there may still be some charged ions left in it.

If the ulcer is looked at after the treatment, the surface will seem to have turned a pearly white, while the skin around is reddening. This reaction passes off in about forty-eight hours, and the ulcer looks clean and takes on a healing action. He finds it best to allow three weeks between treatments, and to use a simple dressing, such as lotio rubra, during the interval.

When breaking the current it is necessary to evenly and gradually reduce the strength, else painful shocks will be caused.

The author repeats that the electrode must be polished quite brightly before each application, and he finds this is best done with a bit of the finest glass-paper used by cabinet-makers.

THE RESULTS OF RADICAL OPERATION FOR HERNIA.

SERTOLI (*Archiv für klinische Chirurgie,* Bd. 98, Heft 2) reports upon the results obtained in operation for hernia of various kinds done in Ceci's clinic at Pisa during the years 1895 to 1907. Out of 1509 operations for inguinal hernia 1412 healed aseptically, in 90 there was suppuration, and in 7 the result was fatal. In the aseptic cases hematoma formed in several, but the blood was soon absorbed under pressure of a suitable bandage, healing was delayed only a few days, and the scar was perfect. The suppuration was in most cases due to inability to properly isolate operative cases, as was shown by the reduction in suppuration following the installation of suitable building equipment. Some patients were found to be more prone to suppuration, especially those suffering from syphilis or arthritis and those unusually fat. Of the seven fatal cases, two died of pneumonia, three of pulmonary embolism, one of uremia, and one of heart failure.

As to the end results only those cases operated upon above two years prior to the report are considered, the number of these being 1169. Of this number the results were determined in 932—534 by personal investigation, and 398 by inquiry of the various family physicians. Recurrence took place in 54—34 during the first year, 15 within two years, and 5 after two years. The most fertile cause of recurrence was the large size of the hernia operated upon; the age of the hernia was not an important factor; multiplicity of hernias was of considerable importance in the causation of recurrence. As regards the age of the patient, the greatest number of recurrences was at the age of twenty to forty; however, this was the age at which the greatest number of operations were done. Too early return to work resulted in return of the hernia in a number of cases. The physicians in urging the operation upon patients did not impress upon them the danger of resuming their work too soon after operation.

For strangulated hernia 34 cases were operated upon, 29 aseptically; of these, five died. Of the 29, the subsequent history could be traced in 18, and in none of these did the hernia recur.

For femoral hernia 106 patients were operated upon, of whom 75 were women; 14 suffered from strangulation. Of the 92 reducible hernias four underwent suppuration; 54 could be traced, and among these there was only one recurrence. Among the 14 strangulated hernias there was one death and one recurrence; there was no suppuration.

For umbilical hernia 35 patients were operated upon. Suppuration occurred in only one; there were two deaths and one recurrence.

Operation was done on 20 patients for epigastric hernia; there was no suppuration, and among 12 cases traced there was no recurrence.

Ventral hernia was operated upon thirteen times without suppuration; in seven cases traced there was no recurrence.

THE INFLUENCE OF FIBROLYSIN UPON SCAR TISSUE.

BRANDENBURG (*Archiv für klinische Chirurgie,* Bd. 98, Heft 1) reports upon some experiments upon rabbits undertaken in order to determine the influence of fibrolysin upon scar tissue. The claim of Wolf that fibrolysin produces hyperemia and chemotaxis and has a lymphagogue action, the author asserts, is based entirely upon hypothetic grounds. In his experiments the author made use of injections of fibrolysin into and under the skin. After a time the tissues thus treated were excised, fixed in Zenker's solution, and studied microscopically. Study was also made of the effect upon old scar tissue by injection of fibrolysin into it. The experiments showed that fibrolysin has an effect upon the general condition, producing apathy, sleepiness, loss of appetite, and loss of flesh. The author was much astonished to note that during the course of the experiments the rabbits were unfruitful even in spite of frequent cohabitation. After the conclusion of the experiments the animals again conceived

and gave birth to healthy offspring. Whether the temporary sterility was due to the direct action of the fibrolysin upon the genital organs or was due to the general loss of condition could not be determined. Autopsy upon several animals killed by chloroform failed to reveal any abnormality in the tissues, but there was a general scarcity of fat in spite of good care.

The researches showed that fibrolysin has no lasting influence upon scar tissue. The good results which have been reported from all sides from its use must have been brought about by other treatment combined with its use, as, for example, massage and hot-air bathing, in Dupuytren's contraction, or frequent sounding in case of stricture or stenosis. Inasmuch as it does not produce hyperemic and lymphagogue effects, it is possible that it has some good effect when combined with these other methods of treatment.

RADICAL OPERATION FOR CANCER OF THE LARGE INTESTINE.

DENK (*Archiv für klinische Chirurgie*, Bd. 98, Heft 3) reports upon the cases of radical operation for cancer of the large intestine occurring in the private and hospital practice of von Eiselberg, numbering 39 in all. Of these 23 were in men and 16 in women; the ages varied from twenty-seven to seventy-three, the greatest number occurring in the fifth to the sixth decennium. The distribution of the lesion was as follows: Cecum 11, ascending colon 4, hepatic flexure 3, transverse colon 4, splenic flexure 12. In 12 cases there was obstruction, and in the remainder there was no or only slight stenosis. In most cases there was a history and symptoms of acute or chronic stenosis of the intestine, which in old people is always highly suggestive of cancer. There was stubborn obstipation alternating with diarrhea, and pain sometimes localized and sometimes not. Colic-like attacks with visible peristalsis, borborygmus, feeling of fulness in the abdomen, vomiting, great relief after defecation, bloody stools, and severe tenesmus were very frequently present. In about half the cases tumor could be felt; about a third of the cases showed emaciation.

The diagnosis is not always easy. In the cases in which acute obstruction comes on without premonitory symptoms, the cases in which cecal cancer manifests itself in a manner similar to appendicitis, and in those cases in which the history points to a stomach affection the diagnosis is difficult, when at the same time there is no palpable tumor.

The indication for radical operation is present in every case when the tumor is not very large and when there is no metastasis to the liver, peritoneum, or distant lymphatic glands. Infiltrated lymphatic glands in the region of the tumor do not constitute a contraindication, for, on the one hand, they can easily be removed, and on the other they are not always carcinomatous but often only the seat of inflammatory swelling. Extension to the adjacent portions of the intestine, the bladder, uterus, etc., does not offer an insurmountable obstacle to operation.

The prognosis of radical operation depends in the first place upon the condition of the patient when he presents himself for operation. It is unfavorable in those in whom ileus is present on account of the danger of stercoremia. The site of the tumor is of importance. Cecal cancer is but slightly prone to produce stenosis, while the cancer of the sigmoid has this tendency to a high degree; therefore the latter gives a better prognosis, because the symptoms of stenosis induce the patient to go earlier to the physician than he does in case of cecal cancer, which is often inoperable when the physician first sees it.

The method of operation used by von Eiselberg was the primary resection and lateral anastomosis of Mikulicz, with an occasional atypical operation consisting of the production of an artificial anus or end-to-end anastomosis. When a palpable tumor was present the incision was made over it, otherwise it was made on the middle line.

Out of the 39 patients operated upon 19 died and 20 were cured. The deaths were due to peritonitis in 15 cases, pneumonia in 3, diphtheric enteritis in 1, and recurrence

in 1. The average age of the patients who recovered was forty-eight years, and that of those who died was fifty-five. However, the youngest patient in the series, aged twenty-seven, died, while the oldest, aged seventy-three, recovered.

EARLIER DIAGNOSIS OF MALIGNANT DISEASE OF THE BONE.

DAWBARN (*International Journal of Surgery*, May, 1909), having convinced himself that the earliest clinical manifestations of malignant disease of the bone are decalcification and softening, tests for this softening by means of the ordinary stout sewing needle, which is grasped firmly in the needle-holder and thrust in. Where malignancy exists the resistance to the entrance of the needle has become distinctly lessened, the degree of softness depending upon the stage of involvement of the bone. The two sides should be examined—that is, one should first test the density of the suspected bone, and then the similar point or points upon the opposite side of the median line. It is well to draw the temper of the needle first by passing it for a few moments through a flame. Thus the annoyance of occasionally leaving a broken needle-tip in the bone may be avoided. Even should this accident occur there is no need for anxiety, since, as a rule, the bit of steel so buried in the bone remains quiescent.

Where such early softening of the bone is found with little or no other reason for diagnosis of malignancy, we are justified in regarding the probability as being one of grave degree. Hence the softened area should be exposed, the periosteum stripped away, and the portion of the softened bone scooped out for microscopic testing. Instantly after doing this the raw surface should be swabbed with Harrington's fluid, at once sterilizing the mouths of blood-vessels and lymphatics. Dawbarn states that his method of controlling the progress of ineradicable malignancy of the regions fed by the superficial carotid has never received by the profession the thorough trial to which any new plan is entitled before discarding it as being ineffective. His method consists not merely in the ligation of the superficial carotid, but also in its complete extirpation; or else after being ligated at its origin it is permanently closed by paraffin injection, each of its branches as reached being either tied off twice and then divided between, or left open in order to receive the same hot, melted paraffin injection. In this latter way he now closes up every one of the fifteen or more branches of the internal maxillary continuation of the superficial carotid, thereby shutting off at one blow the main means of free anastomosis between superficial and deep carotid branches of the same side. After ten days' to two weeks' time for recuperation from the first operation, it must be repeated on the opposite side. To do it upon one side only is a complete waste of time. Within one or two weeks thereafter a pulsation can be felt in most instances of such unilateral operation in any and all branches of the superficial carotid which the surgeon has not chosen to paraffin-block.

For two important reasons the superficial carotid should be operated first upon the sound side—not, as might naturally be supposed, first attacked on the cancerous side.

THE EXPECTANT TREATMENT OF LABOR.

DICKEY (*Lancet-Clinic*, May 22, 1909), in commenting upon the entire absence of reliable statistics concerning the mortality of labor in private practice, holds that many causes for death other than the true one are assigned, and the mortality column of pneumonia, inflammation of the bowels, typhoid fever, etc., is unduly swelled, while the true one—viz., septicemia—is kept as nearly blank as possible. He states that it is universally admitted that only a fractional part of the whole mortality is reported, but it is not so candidly admitted that even the smaller part of the morbidity is not recognized and not acknowledged. All such diagnoses as malarial fever, milk fever, and muscular rheumatism should be dropped from our nosology, and every departure

from the normal attributed to sepsis until the contrary is proved. The steady stream of invalided women to the gynecologist, the vast number of semi-invalids who remain away from him and who valiantly struggle to perform social and domestic duties in spite of backache, insomnia, neurasthenia, and a thousand unclassified aches and pains —all these register the results of a morbid lying-in.

Gonorrhea excepted, there is no such potent cause of women's ill-health as a confinement complicated by some septic process. Since it is agreed that the sterilization of the hand is impossible, and that the gloved hand can easily carry higher, to open absorbents, the infecting germ from the vulva, it would seem that it is impossible to make a vaginal examination without at least the danger of infecting. As usually performed, it consists in washing the hands in soap and water, rinsing them in a 1:3000 solution of bichloride, and drying them on a non-sterile towel. The hands of the physician he regards as the most dangerous instrument used in normal labor. Hence he holds that its intravaginal use should be done away with altogether, or at least should be greatly limited.

The diagnosis of presentation and position, he states, can be more accurately made by abdominal palpation than by digital examination.

Williams is quoted to the effect that "the physician who knows how to utilize all the resources of external palpation and manipulation will find that by these means he can usually not only recognize normal and abnormal presentations in advance, but can also convert breech, transverse, or face presentations into those of the vertex."

Dickey holds that the expectant treatment of labor is but the prophylaxis of sepsis, and that the most important factor in such prophylaxis is the elimination, or at least the greatest possible limitation, of digital examinations. We have allowed women in labor to believe in the false notion that, somehow or other, they are helped by intravaginal manipulations. The writer does not forget the strong subjective and objective influences brought to bear on the physician to do something during labor. To watch, in inactivity, through weary hours, the apparently unavailing suffering, to remain cheerful and optimistic under the urgent appeal for relief made by voice and eye of the sufferer and her group of friends, taxes more than any other experience the courage and patience of the physician.

And yet, for all this, he believes that the guiding spring of our conduct should be "hands off." The great reduction in the mortality of lying-in women inaugurated by the immortal Semmelweis has been maintained by individual effort in preventing infection.

UTERINE CANCER.

As a noteworthy contribution to the rapidly growing literature devoted to prevention of disease and its recognition at such an early stage that radical cure by surgical means is still possible, the report of the Council of the British Medical Association, sanctioned by the Section on Obstetrics and Gynecology (*British Medical Journal*, May 15, 1909) should be considered most carefully.

The attention of all medical practitioners is directed to the necessity of emphasizing the curability by operation upon uterine cancer in its early stages.

The adoption of a more extensive operation by the abdominal route has made it possible to deal successfully with cases hitherto regarded as inoperable, and to remove more of the pelvic cellular tissue as well as a portion of the vaginal walls; it is in these situations that recurrence is prone to develop.

Many patients now present themselves for examination and treatment when the disease is considerably advanced, and it is hoped that by a wide-spread and accurate knowledge of the early signs and symptoms the number of such patients will gradually diminish.

Special attention is directed to the following:

Cancer of the uterus is at first a local disease.

Cancer of the uterus is often a curable disease.

Operation is the only satisfactory method of treatment.

The earlier the disease is recognized the more hopeful are the prospects of treatment.

The risk of operation in early cases is slight and the chance of permanent cure is good.

A recognition of early cancer is not usually difficult and the disease should not be overlooked by the medical attendant.

A medical practitioner who fails to make a physical examination of a patient exhibiting any of the symptoms of uterine cancer incurs grave responsibility.

Treatment of symptoms without a physical examination is unjustifiable.

Early cancerous ulcers should not be treated with caustic; their appearance becomes masked and valuable time is lost.

It is an error to wait and observe in order to arrive at a diagnosis.

In doubtful cases a diagnosis must and can be made in a few days.

To examine, to diagnose, and then to treat, should be the rule in all cases.

Uterine cancer is at first a painless disease which does not affect the general nutrition.

The early symptoms of cancer are: Irregular bleeding of any description, even if it be only traces; bleeding post coitum; and watery, blood-tinged discharge. There may be no loss of strength or wasting, nor any condition to alarm the patient. Pain, wasting, profuse bleeding, and foul discharge indicate advanced disease.

As the majority of cases occur between the fortieth and fiftieth year, the symptoms are too often regarded by the patient as due to "change of life." The medical attendant should not accept this assumption until he is satisfied that cancer does not exist.

Bleeding, however slight, occurring after the menopause, should give rise to suspicion that cancer is present.

If a patient with any of the above symptoms comes for advice, a careful visual and bimanual examination must be made before any treatment is recommended.

Should a patient refuse to be examined—and this is exceptional when the situation is explained—the medical attendant should decline any further responsibility, and no treatment should be advised. The examination should be made, even if bleeding is present, as valuable time may be lost by postponement until the hemorrhage has ceased.

It is most important to observe rigid aseptic precautions in all manipulations.

In the examination, the condition of the vaginal portion of the cervix and of the cervical canal should be carefully noted.

In the early stages new growth may be found on the surface of the vaginal portion of the cervix, in the lining of the cervical canal, or in the substance of the cervix. Any prominence on the surface of the vaginal portion or any ulceration—*i.e.*, a definite loss of substance—should at once arouse suspicion. A nodule or nodules, hard, inelastic, or irregular in outline, felt in the substance of the cervix, suggest the presence of cancer. If the whole cervix be affected, the relative hardness as compared with the soft elastic body is pronounced.

The detection of high-lying cervical cancers, and cancers of the body of the uterus, is only possible after curettage or digital exploration.

The signs common to the early stages of cancer of the cervix uteri are: The definite occurrence of new growth on the surface of the vaginal portion of the cervix, in the lining of the cervical canal, or in the substance of the cervix; friability; bleeding on manipulation.

The definite occurrence of new growth on the portio vaginalis or in the cervical canal cannot fail to arouse suspicion. When, however, thickening of one lip or a portion of one lip of the cervix exists, the nature of the growth is difficult to determine if the mucous covering be still intact. It is then necessary to remove a portion of the af-

fected tissue and examine it under the microscope.

Friability is a sign of the greatest importance, and may be tested by the finger-nail, curette, uterine sound, or an ordinary long probe. Degrees of friability exist in early cases, depending upon the amount of interstitial tissue contained in the growth.

The occurrence of free bleeding after the slightest manipulation is, when combined with friability, a valuable diagnostic aid.

In the vaginal portion of the cervix, in the infiltrating type, one lip, or a portion thereof, or even the entire vaginal portion of the cervix, is infiltrated with cancerous growth. Ulceration occurs early from the surface inward, or necrosis may begin in the center, and opening on the surface leads to the formation of a deep ulcer, with undermined edges.

The growth is somewhat hard in consistence, but is still friable if tested with the probe, curette, or finger-nail.

The papillomatous or polypoid type includes the so-called cauliflower excrescence, and is characterized by the growth from the margin of the os externum of a rounded or flattened tumor, varying in size, which may or may not have a definite stalk. It has a papillary surface, bleeds readily, and is very friable. More rarely it resembles a bunch of soft papillomata. Portions of the growth, pale-red or grayish-yellow in color, are easily detachable on examination.

The superficial flattened type is characterized by a flattened growth on the vaginal portion which tends to spread over its surface. It is prone to early ulceration and is frequently seen clinically as an ulcer. The lip or portion affected is thickened. The ulcer has a sharply defined, raised edge, indented at places, yellowish-gray, finely granular surface, a moderate amount of loss of substance, and an infiltrated base. It bleeds readily on touch, and the amount of hemorrhage is entirely out of proportion to the amount of injury inflicted. The finger-nail can detach small pieces from its surface.

The superficial type in the cervical canal exhibits on the inner surface of the cervical canal an irregular papillary growth which at first attacks the substance of the cervix superficially. As the growth increases portions of it may protrude through the external orifice of the cervical canal. When ulceration occurs, the superficial portion of the growth is shed, with consequent hollowing out of the cervical canal, whilst the remainder of the periphery of the cervix is more or less thickened by infiltration. Where the external os uteri is narrow the process may be hidden, or patency of the os uteri may be produced by destruction of its margin, whilst in uteri where the os is already wide a crater-like cavity is formed.

The cancerous infiltration in the cervical canal proceeds from the mucous membrane deep into the tissues of the cervix, and thus the whole cervix becomes thickened and enlarged, or the enlargement and infiltration may be limited to one or more portions of the cervical walls. Necrosis may commence on the mucous surface, or in the center of the infiltrated area, and may lead to extensive destruction of the cervical tissues.

Probably the majority of cancer cases which are overlooked are examples of disease affecting the lining of the cervical canal or the tissues of the wall of the cervix.

Cancer beginning in the cervical canal is not difficult to detect where the os uteri is dilated, as in many multiparæ. The finger passed into the cervical canal feels irregular elevations or nodules from which portions may be removed. Free hemorrhage follows this manipulation. Difficulty arises where the os uteri is not dilated and the disease is hidden. A sound carefully passed into the cervical canal may give the impression of impinging on an irregular nodular surface, or friable tissue may be removed by the curette. Free hemorrhage following such manipulations is a suspicious sign. Thickening and hardening of the cervix may be detected by a rectal examination, which is most helpful in detecting cancerous nodules in the cervical walls, and should always be made in such cases.

As to the body of the uterus, if the vaginal portion of the cervix, the cervical canal, and the cervical walls have been proved to be free from disease, attention must be directed to the body of the uterus. The uterus may not be enlarged, although a cancerous growth exists in its interior. Usually, however, there is some increase in size, which in advanced cases may be considerable. In doubtful cases, if there be a suspicious hard nodule, or erosion, or ulcer on the external os uteri, a piece including a boundary of healthy tissue should be excised.

The vulva and vagina having been thoroughly cleansed, the posterior vaginal wall should be retracted by means of a speculum, and the cervix pulled slightly downward with a vulsellum. A wedge-shaped piece, the size of a pea or bean, including a margin of healthy tissue, should be excised with a sharp knife.

The bleeding which follows this little operation should be stilled by the insertion of one or two sutures, or by firm tamponade with a strip of gauze. An anesthetic is not essential. The patient should be kept in bed for twenty-four hours.

The tissue removed should be transferred to a small stoppered bottle filled with absolute alcohol or methylated spirit, and forwarded without delay to an expert in uterine pathology.

Where the cancer originates in the body of the uterus or in the cervical canal, it is frequently possible by using the curette to obtain a sufficient amount of tissue for examination without the aid of anesthetics. If this cannot be done, it may be necessary under an anesthetic to curette the whole interior of the uterus and cervix, special attention being paid to the region of the tubal orifices. All fragments should be collected, including those which may have been washed out. The douche, if employed, should consist of sterilized water or a weak solution of corrosive sublimate (1 in 10,000), as carbolic acid and lysol interfere with the staining of the cells.

The fragments should be transferred to a stoppered bottle filled with absolute alcohol or methylated spirit.

If the expert's report is favorable the patient will be reassured; if unfavorable, immediate operation is imperative. The question of operation is best decided by the operator, who may require to examine under anesthesia.

A FUNCTIONAL RELATION OF THE TONSIL TO THE TEETH.

WRIGHT (*Boston Medical and Surgical Journal,* May 20, 1909) reaches the following conclusions:

When a tonsil is normal, infection from the external surface is rare.

Secondary infection through the lymph channels is the usual source.

There are four periods of molar eruptions, with some variations in time, when the tonsils may enlarge without infection or inflammation, at two years, six years, twelve years, and seventeen years.

Tonsils though slightly enlarged when not infected return to normal with complete eruption of the teeth.

Diseased teeth are a prolific source of enlargement of the glands through proximity of membranes, either directly, by infection, or by toxins.

In the treatment of the tonsil by the specialist, may we not include as a routine the observation as to carious teeth and a recognition of these four periods of eruption coincident with slight enlargement?

THE THERAPEUTIC VALUE OF RADIUM.

MACLEOD (*Practitioner,* May, 1909) observes that the two most important factors in the advance of knowledge concerning radium are that the discovery of the action of radium is intensified if the salt be spread by means of a varnish on a flat surface and so applied to the skin, instead of being placed upon a capsule of glass or aluminum, and the employment of an electroscope to estimate the radioactivity of the radium specimen to be applied.

By means of a special varnish, invented by M. Danne, the composition of which has not yet been made known, the radium salt

is fixed on a flat metal plate, or a piece of stiff linen. This varnish is permeable to almost all the rays, and resists the action of heat, water, vaselin, and antiseptics, such as ordinary solutions of permanganate of potash and perchloride of mercury, but it is unsafe to expose it to absolute alcohol or ether. The metal plates vary in shape, some being circular, while others are square, oblong, or triangular, and in size from 5 millimeters up to 6 centimeters. The pieces of linen vary in size up to several centimeters square. The plates are fixed on handles, some being made to move upon them by means of a pivot. In addition to these, small rods or spheres are employed to carry the varnished radium into cavities. The salt of radium which is employed for varnishing on these flat surfaces is the sulphate of radium, which, unlike the bromide, is insoluble. Great care is taken in the spreading and fixing of the salt by the varnish, in order to insure that it is evenly spread, and that each centimeter of surface has 1 centigramme spread on it. The radium sulphate may be employed pure—*i. e.*, with a radioactivity of 2,000,000—but, more usually, it is diluted by mixing it with barium sulphate, so as to reduce the radioactivity to 500,000 or less. In the choice of the apparatus to be employed in an individual case, not only are the weight of the salt of radium employed, its radioactivity, and the total dimensions of the surface over which it is spread taken into consideration, but also the percentage of the *A*, *B* and *Y* rays emitted by it.

This mode of application has two advantages over the older method of applying it: first, by it the maximum effect of the radium salts on the tissue can be obtained, certain weakly penetrating rays not being cut off by the screen of glass or mica; and secondly, and more important, a much larger radioactive surface is obtained. It has been estimated that with the radium salt varnished on a flat surface the effect on the tissue is much greater than if the same amount of salt were applied in a glass tube, and that with the salt spread out 1 centigramme of radium salt of an activity of 100,000 has approximately the same effect as 5 centigrammes of a salt of an activity of 600,000 enclosed in a glass tube.

The varnished surface is not applied directly to the skin, but often with the interposition of a thin layer of gutta-percha to protect it from moisture or discharges, or various screens, consisting of thin aluminum, lead, ebonite, or a layer of wadding one centimeter thick covered with goldbeater's skin, etc., are interposed to cut off the less penetrating rays. By the latter method several brilliant results have been obtained. The *a*-rays are the least penetrating, and are cut off by the thinnest sheet of mica, aluminum, or glass; the same substances cut off the softer *B*-rays, while hard *B*-rays pass through them. The *y*-rays are the most penetrating, and can pass through lead 4 centimeters in thickness. It is these highly penetrating *y*-rays which have the most powerful selective action on diseased tissues, while the softer, less penetrating rays have a less discriminating destructive effect, and are more potent in causing superficial inflammatory reaction.

For example, in a case of epithelioma of the lip, successfully treated by Dominici and Bory, a circular piece of linen 3 centimeters in diameter, with 1 centigramme of radium sulphate, mixed with 3 centigrammes barium sulphate varnished upon it, and a radioactivity of 500,000, was applied to the lesion. But between it and the skin were interposed a layer of gutta-percha 1/10 millimeter thick, a sheet of lead ½ millimeter thick, 8 rounds of papers, 2 layers of gutta-percha, and 2 pieces of plaster. In this way the tumor was subjected to an irradiation exclusively composed of *y*-rays of an activity estimated at 4500, and the secondary radiation, produced by the rays passing through the lead, was intercepted by the paper.

In order to avoid getting an excessive action on the surface of raised lesions by repeated or prolonged exposures, Wickham and Degrais have introduced a method of application which they have graphically named the method of "Feu croise," and which consists in placing two or more flat

"applicators" opposite each other on the tumor, so as to subject the deeper parts of it to the "crossed fire" of penetrating rays from the different "applicators."

The time of application of a specimen of radium depends on various factors, such as the radioactivity and amount of salt applied, the extent of surface on which it is spread, the percentage of the different rays, the presence of some such screen as lead or aluminum between it and the tissue, and the diseased condition for which it is applied. In the early cases the time was estimated in an approximate manner by applying the specimen of radium to one's own forearm, or to that of the patient, and observing how long it took to produce a mild reaction, and in estimating the time of exposure in an individual case Wickham and Degrais still advocate the simple expedient of employing a preliminary tentative exposure of the tissue. Experience has taught certain lessons, however, which are a guide in this matter. It has been found that 5 milligrammes of pure radium sulphate, varnished on a flat surface of 1 centimeter square, when applied directly to the skin for twenty minutes, can produce a severe reaction with ulceration, the same result being obtained by three applications of ten minutes' duration on consecutive days, and also that 2 centigrammes of sulphate of barium radium of a radioactivity of 500,000 requires an application of forty minutes at one sitting to cause ulceration.

In the treatment of vascular nevi a curative effect can be obtained without the production of marked reaction, which on account of the scar it leaves is to be carefully avoided, a slight reaction, however, being no disadvantage. Using a flat round plate 6 centimeters in diameter, over which is varnished 2 centigrammes of sulphate of barium radium of an activity of 500,000 with 10 per cent *a*, 87 per cent *B*, and 3 per cent *y* rays, Wickham and Degrais, in the case of pale "port-wine stain," found that the direct application to the skin should be one hour in two séances, while in the case of deep violet nevi it should be two hours in two séances. In the case of raised angiomata, and still more in that of rodent ulcer and epithelioma, the time of application might be safely increased.

The rays from radium have a selective action on certain diseased tissue elements, affecting them much more powerfully than they do healthy tissue, and eventually causing their destruction. The types of cells on which they have the most marked action are the comparatively weakly resistant cells of rodent ulcer, and various other pathological conditions of the epidermis, such as epithelioma of the skin and warty growths. Their destructive action has also been proved to be great in the case of the cells of epithelioma of the lip and mouth. On the cells of cancer, growing from the epithelium of the esophagus, uterus, bladder, etc., the destructive action on the diseased tissue has not been so marked, but this may be regarded quite reasonably as due to the difficulty of reaching such growths, of watching and controlling the applications, and to the great rapidity of the malignant proliferation in these situations, as compared with that which occurs in rodent ulcer.

Another definite effect of the radium rays is that on the sensory nerve terminations, for, like the *x*-rays, they not only allay itching but also relieve pain. The bactericidal action of the radium rays is slight and is probably dependent on the rays.

At the time of application of the radium no definite sensations or signs of inflammation are produced, and it is as a rule only after the lapse of ten to fourteen days that the characteristic reaction sets in. This is associated with all the signs of inflammation, which may be limited to the lesion itself, or if a powerful reaction occurs it may spread to the neighboring skin. In a marked reaction oozing takes place, and a scale of more or less firm scab forms, in some cases not unlike a rupial crust, which separates naturally in two to four weeks, when another scab may form, or the lesion may have dried up and appear to be completely healed. When the application has been excessive, signs of reaction may appear much earlier, and erythema may be

noticed in twenty-four hours. Vesicles then appear which dry up to form a scab, which falls off in a week or ten days, leaving a superficial ulceration. This heals slowly, leaving a scar which is red, smooth, and presents telangiectases like the scar of an *x*-ray burn. The radium reaction is probably the result of an inflammatory process caused by the toxic effect of the dead tissue elements, which have been killed by the rays, acting on a tissue partially devitalized by the same rays.

In addition to the rays which are given off by the radium, emanations in the nature of a gas are also emitted, which confer radioactivity on substances with which they come in contact. These emanations may play an important part in the future developments of radium therapy.

In the experience of almost every one who has employed radium for the treatment of rodent ulcer, there is no remedy which gives such brilliant results as it does. There appears to be in the radiations from radium something which is more selective in its action on rodent ulcer than the rays from an *x*-ray tube, for cases in which healing has gone on up to a certain point with the *x*-rays and come to a standstill have begun to heal again when radium was applied.

Epitheliomata of the skin are also capable of being cured by radium, though not so easily as rodent ulcers, since the cells composing them appear to be more resistant to the radiations than those of rodent ulcer.

Several cases have been lately reported in which epitheliomata of mucous membranes, such as the lip and tongue, have also resolved under this treatment. This is an observation of great importance, as it is a general experience that the *x*-rays have a feeble action on this type of growth.

All forms of vascular nevi have been treated more or less successfully by radium, and the statistics published by Wickham and Degrais, based on 101 cases, show that by this treatment results can be obtained which are superior to those obtained by any other means at present at our disposal.

By weak doses of radium, frequently repeated, raised angiomata completely dry up and become decolorized, leaving a pale, supple scar, and this can be accomplished without the production of any marked reaction. This method has a great advantage over excision, electrolysis, and the actual cautery, since it is painless and can be done while an infant is asleep.

It is in "port-wine stain," however, that the most striking results have been obtained, for up to now these lesions have been the despair of surgeons, and any treatment adopted, if successful in destroying the nevoid tissue, usually resulted in the production of scarring, which was as disfiguring as, if not more so than, the disease. By means of repeated doses of radium, just sufficient to produce a slight reaction and no more, the red or purple tint of the nevus has been greatly diminished and the color gradually reduced, so as to approach that of the surrounding skin, without the production of a scar.

With regard to the treatment of the various forms of lupus vulgaris, their experience with radium has been disappointing.

CONGENITAL HIP DISLOCATION.

TURNER (*American Journal of Orthopedic Surgery*, May, 1909) on the basis of clinical and anatomical investigation of this affection comes to the following conclusions:

The condition is usually intrauterine in occurrence, relatively seldom resulting from difficult delivery.

Some few cases may develop progressively, where there is some deficiency of the upper lip of the acetabulum, combined with relaxed ligaments and loss of tone in the surrounding muscles.

Before attempting reduction, the shape and axis of the head of the femur should be ascertained, also condition of acetabulum.

In young cases the radiogram may be misleading owing to the predominance of cartilage in the formation of the articulation.

Reduction may be carried out either over

the posterior rim of the acetabulum or the inferior, according to the experience of the operator.

After reduction the "range of retention" in the joint should be ascertained by redislocating and fixation adopted in the position most removed from the recurring point.

Malposition, especially that resulting from anteverted head, should be carefully guarded against.

Between fixations it is wise to control the position of the head by means of the radiogram.

In older cases, after six years of age, the possibility of contractures in a faulty position must be guarded against. Therefore the fixation must not be of too long duration—six weeks to two months.

While weight-bearing may stimulate the development of the femoral head and acetabulum, it is not essential and quite contraindicated in a percentage of cases.

Owing to muscle changes the convalescence treatment of massage and exercises should be carefully followed until the disappearance of the Trendelenburg symptom.

Myorrhexis of the muscles is only occasionally essential.

PAIN IN THE FEET IN RAYNAUD'S DISEASE.

Wilson and Muschlitz (*American Journal of Orthopedic Surgery*, May 1909) thus conclude an article on this subject:

Raynaud's phenomenon is usually bilateral, occasionally unilateral, but is rarely symmetrical.

It is more common in females between the ages of twenty-eight and thirty-five. When seen in children syphilis should be suspected.

Its relation to rheumatoid arthritis is well worthy of careful study, and that they may coexist there can be no doubt.

Treatment is of very great importance, and special stress should be laid upon climate and occupation. The former should be very temperate and the latter should be a vocation not requiring much weight-bearing. Cold bathing is contraindicated.

Proper shoes of the orthopedic type and woolen stockings should be worn at all times.

Internal medication may be used for improvement of general health and not for the vasomotor condition.

No operative procedures should be performed. No plates should be worn. Cutting of any kind about the foot or toes should be discouraged.

MECHANICAL LESIONS OF THE SACROILIAC JOINT.

Fitch (*American Journal of Orthopedic Surgery*, May, 1909) notes that Goldthwait and Osgood have called attention to this class of cases. They are becoming more and more frequent. As evidence that lesions of the sacroiliac joints are of frequent occurrence the records of the writer show that five per cent of the last five hundred cases seen by him in private practice have had well-marked symptoms due to lesions of these joints. The chief complaint of any patient from sacroiliac strain may be due to definite injury or to any cause which disturbs the normal relation to the spinal curves, thereby tending to tilt the sacrum abnormally. This class of cases is well illustrated by those patients whose tissues, becoming relaxed during a prolonged sickness, develop a flat back—that is, the lumbar curve of the spine becomes obliterated and the sacrum is consequently tilted at an abnormal angle with the ilia.

Pain is the chief complaint. Pain in the region of the joints may be due to the injury of the joint itself, or to muscle fatigue from the attempt of nature to support the weakened joint. The referred pains are usually reflected downward and represent pressure upon the nerves in the neighborhood of the sacroiliac joints. This is exemplified in sciatica. The patient stands in the stooping position with the body listed to one side, usually away from the one which is affected, knees slightly flexed.

There is tenderness over the affected joints. The motions of the back and lumbar region are limited by spasm. The treatment advocated is a non-elastic webbing belt buckled securely about the pelvis, and held in place by perineal straps, which will give adequate support. When the patient is lying down a small pillow to support the lumbar spine will be a distinct help in relieving the tension upon the injured joint.

THE OPERATIVE TREATMENT OF CASES OF EXTENSIVE CYSTOCELE AND UTERINE PROLAPSE.

WATKINS (*Surgery, Gynecology and Obstetrics*, May, 1909) in discussing the operation of transposition of the uterus and bladder thus describes the technique:

The uterus is first dilated and curetted if needful. The anterior lip of the cervix is grasped with a volsella forceps, drawn down, and a transverse incision is made across the vagina at the junction of the anterior wall and the cervix. The edge of this incision is caught with the artery forceps and held taut and a sharp-pointed, six-inch pair of scissors, closed, is pushed up between the anterior vaginal wall and the bladder about to the urethral body. The handles of the scissors are now separated and the scissors withdrawn. This generally causes enough separation of the anterior vaginal wall from the bladder, though the amount of separation will vary, depending upon the size of the cystocele and the resistance of the tissues. The points of the scissors are kept in contact with the vaginal wall in order to guard against injury of the bladder, and in the separation of the handles of the scissors not too much force is used for fear of tearing the bladder wall. The anterior vaginal wall is incised along the median line; the edges of the flap are caught with forceps. With gauze over the finger further separation of the vaginal wall from the bladder may be easily accomplished. This should be done accurately since the ureters may be endangered; bleeding is increased, and there is a tendency to the accumulation of bloody serum in the wound, thus increasing the dangers of slight infection which sometimes results in extensive plastic vaginal operations. Moreover, the extensive separation of the bladder also increases the danger of exfoliation of the bladder epithelium which may follow much traumatism of the bladder wall. The anterior vaginal wall should be freed just enough to cover the uterine body, except in cases of very extensive cystocele. With the cervix held downward the bladder is separated from the uterus by blunt dissection with the scissors, the points of this instrument being kept pressed against the cervix so as to avoid bladder injury. They are pushed upward one-fourth to one-half inch and then opened, then a little higher and opened, and so on until the peritoneum is reached. The peritoneum is detected as a thin membrane which moves freely underneath the finger over the anterior wall of the uterus. As long as any of the bladder wall remains attached the tissues under the finger feel thick and fixed. Further separation of the bladder from the uterus is made by inserting two fingers into the wound and separating them. The amount of separation should be enough to allow the delivery of the body of the uterus.

The peritoneum is now opened, often by means of the blunt dressing forceps. The anterior uterine wall is grasped with a single vulsellum forceps inserted under the guidance and protection of the left index-finger. As this is pulled downward and forward the cervix is pushed upward and backward. The anterior uterine wall is grasped by elevating the bladder wall with an eight-inch forceps or a "ribbon retractor," and a second vulsellum catches the uterine wall near the fundus, which can usually be easily delivered into the vaginal canal. Care should be taken not to attempt to deliver the anterior surface of the uterus, as the diameters of this are much greater than are the diameters of the fundus. Catgut suture is passed through the posterior uterine wall near the fundus and through a broad surface made by splitting the anterior vaginal wall, brought out on the mucous surface a little above the urinary meatus, and tied. Care must be taken not

to fix the uterus so that it will press upon the urethra. The vaginal opening is then closed with a continuous catgut suture, the suture occasionally catching up a small bite of the uterine tissues. The transverse vaginal incision is often closed in the same line of suture so as to lengthen the anterior vaginal wall and to displace the cervix further backward and upward. In case of very large cystocele some of the vaginal mucosa is excised. If the cervix is eroded or much hypertrophied, a part of it is excised before the above suture is completed, and the wound in the cervix is closed with the same suture. If there is any bleeding about the cervix, this is easily controlled by catching the tissues deeply to either side of the cervix so as to include the vaginal branches of the uterine artery. The tilting of the uterus displaces the uterus upward and backward so that it is not visible.

It is surprising how little the anterior wall bulges even in the case of a much enlarged uterus. Occasionally the vaginal mucosa is much hypertrophied over the body of the urethra, and in these cases it is advisable to excise some of the hypertrophied mucosa and bring the edges together with a fine catgut suture. Otherwise the patients are liable to complain of a slight protrusion. Many of these patients have urethrocele—that is, the urethra is displaced downward. In these cases care should be used to commence the sutures in the vaginal flaps low enough down so that when tied the urethra will be replaced to its normal location.

This operation leaves the body of the uterus beneath the bladder. Should this operation be done during the reproductive period it is absolutely necessary to prohibit pregnancy. This can be done by resection of the proximal ends of the tubes. In cases of extensive cystocele uterine prolapse usually occurs after the menopause. In cases of complete uterine prolapse when the uterus is large and the broad ligaments much elongated, Watkins excises a part of the body of the uterus, leaving enough uterine and cervical tissue to insure occlusion of the hernial opening through which the bladder wall is protruding. In some of the worst cases all is excised save the cervix and a portion of the external uterine wall. After-treatment is the same as for all the vaginal operations. The use of the catheter is avoided, the patients being held up or even allowed to sit up if necessary. The moist dressings over the vulva have been of boric acid or normal saline solution. With this treatment there is generally a discharge of decomposed bloody serum in two or three days with drop of temperature to normal.

The cystocele is cured by plugging up the hernial opening, through which the bladder protruded, with all or part of the uterus. The bladder also rests upon the posterior wall of the uterus and cannot prolapse unless the entire uterus prolapses. In cases of extensive displacement the treatment of the cystocele is the most important feature of the operation, as the extensive cases are generally found after the menopause; and after the menopause the bladder is the only organ involved that is functionating. It is difficult to appreciate how this hernial opening can be otherwise permanently closed. A study of this hernial ring shows that it seldom, if ever, has any well-defined "pillars." It extends from the cervix to the pubes and from one ramus to the other. Observation also shows that the fascia of the vesicovaginal septum is much atrophied, and not enough of it remains to be of much use in plastic repair. The amount of thinning out of the vesicovaginal septum is more than can be accounted for by the increase of area as a result of stretching. Very little of the fascia retracts, as in injuries of the posterior vaginal wall, and the diminution in the amount of fascia can be accounted for chiefly by atrophy only.

The uterine prolapse is corrected by shortening of the broad ligaments, which results from tilting of the fundus of the uterus forward and downward. The cervix is displaced upward and backward so that the anteversion of the uterus which results twists the broad ligament about 180 degrees. The twist produced in the broad ligaments in cases of complete procidentia

where the cervix points upward and the fundus downward is about 360 degrees. When one considers the width of the broad ligaments one appreciates the amount of shortening of the broad ligaments which results from a twist of 180 to 360 degrees. Any tendency for the bladder to prolapse increases the tilting of the uterus and consequently elevates it in the pelvis. There is no necessity for suture of the peritoneum, as it is in contact with the uterus, and in a few hours becomes adherent. To suture the peritoneum to the uterus increases the traumatism and also adds to the danger of sepsis without being of any advantage.

All cases of cystocele after the menopause, and most of the cases of cystocele during the child-bearing period, are probably best treated by the operation of Stone, Goffe, or Reynolds.

In all cases of prolapse of the uterus after the menopause where there is no suspicion of malignant disease, or where there is complete procidentia, the operation should be modified by excision of part of the uterus.

In all cases of prolapse and cystocele during the reproductive period where pregnancy is improbable or undesirable, the modified operation of excision of a part of the tubes should be done. In the other cases palliative or less radical operations should be resorted to, at least until after the menopause.

The uterus should never be removed except for malignant disease, as it is of great value as a plug for occlusion of the hernial opening of the bladder and of much use as a prop for the bladder. When the uterus is removed the vaginal canal should generally be completely closed, as otherwise hernia of the bladder is very liable to recur, and inversion of the vaginal canal frequently takes place.

Watkins notes that there has been but one case of protrusion of the uterus after this operation which has required a second operation; that in a very few cases there has been slight catheter cystitis, which has not caused much trouble; that in a recent report of forty-nine cases not one of them complained of any vesical symptoms—in not one of them has there been any retention of uterine secretions. There have been no deaths either as a direct or indirect result of the operation.

AMPUTATION OF AN ARM WITH LOCAL COCAINE ANESTHESIA.

CUNNINGHAM (*Boston Medical and Surgical Journal*, June 10, 1909) performed an amputation because of gangrene, using local anesthesia, since the patient's condition was such as not to admit of the use of a general anesthetic.

The arm was held up so as to expose the axilla. A tourniquet was placed as high as possible. An area three inches long, beginning at the lower border of the axilla and extending along the inner edge of the biceps, was cocainized by the injection of a one-per-cent solution of cocaine. The incision was made through the skin and superficial fascia until the border of the biceps muscle was exposed. The skin was then cocainized in a line extending across the anterior surface of the biceps, beginning at the lower border of the incision already made and running at right angles to it. The incision was carried down to the biceps. The muscle was then injected with cocaine and divided with scissors. By retracting this triangular-shaped flap of skin and muscle, the vessels and nerves were exposed by blunt dissection. The median nerve was isolated and its surface moistened with the cocaine solution. The needle was then plunged into the nerve and a few drops of cocaine injected. The nerve was then divided in the cocainized area. The musculo-cutaneous and ulnar nerves were exposed and treated in the same manner. There was no sensation or contraction of muscles produced during the division of these nerves. The brachial artery was isolated, ligated in two places, and divided between the ligatures. The basilic vein was treated in the same way. The division of the vein showed its lumen to be plugged with a thrombus. The vein was therefore dissected upward toward the axilla for a

distance of about three inches in hopes of getting above the thrombus. The presence of the tourniquet made it impossible to carry the dissection higher, and the vein was therefore again divided, the thrombus still being present at this point. The anterior group of muscles were now divided with scissors down to the bone. The musculospiral nerve and superior profunda artery were exposed, the nerve injected and divided, the artery ligated in two places and divided between the ligatures. The skin on the posterior aspect of the arm and the triceps were divided by a single sweep of a long bistoury down to the bone, thus completing the circular incision around the arm. The cephalic vein was secured and tied. The muscles were peeled back from the humerus for a distance of two inches, the bone sawed through and the arm removed. The tourniquet was removed and there was no bleeding, except a slight ooze from the muscles. The muscles were gathered around the end of the bone by a purse-string catgut suture, care being taken not to include the nerve stumps. The external wound was closed by interrupted silkworm-gut sutures without drainage. A dry, sterile dressing was applied to the stump and the stump fixed firmly to the chest wall. Duration of operation, forty minutes.

The patient states, and it is believed, that there was no pain connected with this operation. The only disagreeable feature was the noise produced by sawing through the bone. There was no change in the pulse as a result of the division of the nerves. About 4 drachms of a one-per-cent solution of cocaine was used. In using the cocaine, care was taken to open up the area which was injected in about a minute after the injection was made; thus no cocaine remained in the tissues for any period of time. There was no evidence of cocaine intoxication. There was sensation in the stump at the completion of the operation.

REVIEWS.

A Text-book of Practical Therapeutics. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By H. A. Hare, M.D., B.Sc. Thirteenth Edition, Enlarged, Thoroughly Revised. Largely Rewritten. Illustrated. Lea & Febiger, Philadelphia, 1909. Price $4.00.

The first edition of this book on Therapeutics appeared in 1890. Since that time more than 60,000 copies have been sold. Within the last year a Korean Edition has appeared and the second Chinese Edition is now in process of publication. The following extract from its preface may be of interest:

"No one who does not keep in close touch with the therapeutic literature and practice of the world can have any conception of the multitude of new methods of treatment which are brought forward every year, some of which prove valueless, but many of which are exceedingly useful. In addition to new methods a constant modification of old ones is occurring whereby their efficacy is greatly increased.

"It is because of this constant advance that the preparation of a new edition has been needful in order that this book may continue to represent modern therapeutic procedures.

"Whatever success has attended the preceding editions has undoubtedly been due to the fact that in their preparation an endeavor was made to meet the requirements of the active practitioner of medicine, the author utilizing his own experience to discover what these are. In this edition these needs have been once again carefully studied, and the results of scientific research in the laboratory and at the bedside have been joined in an endeavor to make the various therapeutic procedures rational and successful.

"Among the newer remedies considered is atoxyl as a substitute for the older arsenical preparations, with particular reference to its employment in syphilis, in which many consider it the 'third specific.' The employment of phenolphthalein in constipa-

tion is considered, as is the use of salicylate of ethyl and novaspirin in the treatment of rheumatic and gouty affections, and aspirin locally in tonsillitis. The employment of magnesium sulphate locally for the relief of pain and inflammation is discussed, as is also the treatment of burns with picric acid. The use of urotropin to prevent cholecystitis in enteric fever and infection after injury of the cerebrospinal system is also considered. The so-called Lenhartz method of treating gastric ulcer and Murphy's method of treating septic peritonitis are included. Accidents after the use of antitoxin, and the newer antitoxins for gonorrheal infection and cerebrospinal meningitis, have been considered for the first time. The results of recent researches on the anesthetics, local and general, have been included. Every article, moreover, has been subjected to careful revision, and in order to aid the physician illustrative prescriptions are added to the discussion of nearly every drug.

"The author's hearty thanks are once more due to Dr. G. E. de Schweinitz, Professor of Ophthalmology in the University of Pennsylvania, for the revision of the articles dealing with the therapy of diseases of the eye; to Dr. Edward Martin, Professor of Clinical Surgery in the University of Pennsylvania, for the revision of the articles dealing with the treatment of syphilis, diseases of the genito-urinary organs, and antiseptics; and to Dr. Barton Cooke Hirst, Professor of Obstetrics in the University of Pennsylvania, for his revision of the subjects of eclampsia and the diseases of the puerperal state."

MEDICAL GYNECOLOGY. By Samuel Wyllis Bandler, M.D. Second Revised Edition. Illustrated. The W. B. Saunders Co., Philadelphia, 1909. Price $5.00.

It is not many months since the first edition of this book was reviewed in these columns in complimentary terms. So short an interval existed between the appearance of the first edition and the publication of the second that there has been little that the author could add to his original text save to correct errors which were unavoidable and to improve the text by such emendations and additions as seemed to him wise. The book is of interest to the general practitioner, from whom much of minor gynecological practice has gradually drifted, because the text is manifestly prepared for him rather than the specialist in diseases of women. It possesses the great advantage, in most instances, of telling the reader exactly what the author would do if a given case were under his care. In other words, although different opinions are quoted, the author's own definite directions are to be found plentifully scattered through the text. We have no doubt whatever that the second edition will prove as successful as the first.

THE MALARIAL FEVERS, HEMOGLOBINURIC FEVER, AND THE BLOOD PROTOZOA OF MAN. By Charles F. Craig, M.D. Illustrated. William Wood & Co., Philadelphia and New York, 1909.

The change which has come over the Medical Service of the Army and Navy of the United States within recent years is well illustrated by the excellent work which has been done by Captain Craig in his investigations of the subjects with which this book deals. Work such as this not only raises the worker in the opinion of members of his own corps, and of the medical profession in general, but gives him a place among the men of science and calls forth the admiration and respect of the laity as well. The latter influence is advantageous in that it renders it possible to obtain favorable legislation for the Medical Department of the Army and Navy, and it has the additional advantage that it establishes a grade of scientific endeavor toward which younger medical officers can strive, and so provides an example which they may at least hope to emulate. Another encouraging sign is the fact that Dr. Craig's efforts have been recognized by his superior officers, and that they have lent him all the encouragement and assistance which it is in their power to give. In other words, the present book not only represents his thorough and complete study of these very important subjects, the importance of which is more evident as each year goes by, but also the volume stands for all that is good in medical research. Dr. Craig has had exceptional ad-

vantages in this country and abroad for the carrying out of his investigations, and these advantages have been utilized to the fullest degree. The present book is one that should be in the hands of every practitioner who practices in malarial districts. It should be read by those who live in northern climes in order that their conception of disease may be more thorough and complete, and it would be advantageous if professors of medicine in the various medical schools would insist that their students obtain the volume and carefully peruse it during their college days.

THE PRINCIPLES OF BACTERIOLOGY. By A. C. Abbott, M.D. Eighth Edition, Thoroughly Revised. Illustrated. Lea & Febiger, Philadelphia, 1909.

Dr. Abbott's little book, which has passed through eight editions in eighteen years, illustrates in many ways the remarkable progress which has been made in the science of bacteriology during the last two decades. That a book dealing with so special a subject should have proved so popular is also a tribute to the skill of the author in presenting the subject-matter to his readers. A few years ago no book dealing with so special a subject would have been popular. There are few writers who are skilful enough to present scientific details in so interesting and readable a manner. From the very first Dr. Abbott has gone upon the principle that the reader is unfamiliar with the subject, and has restricted himself to those fundamental features which are essential to its understanding. The present edition has been brought well up to date. The article upon the important subject of Infection and Immunity has been practically rewritten and stress has been laid upon the newer views of phagocytosis. So, too, the comparatively new subject of protective vaccination and the preparation of antisera has been reviewed, and, with the object of keeping the book of moderate size, some of the matter in previous editions has been eliminated. We feel sure, with the author, that these changes will serve to maintain the reputation of the book as a safe guide for the beginner, and we would go further than this by asserting that the general practitioner will find much in its pages which will prove of practical advantage to him in his daily work, particularly in the pages upon vaccines and cognate subjects.

A TEXT-BOOK OF OBSTETRICS. By Barton Cooke Hirst, M.D. Sixth Edition. Revised and Enlarged. Copiously illustrated. The W. B. Saunders Co., Philadelphia, 1909. Price $5.00.

When a book is sufficiently successful to have reached its sixth edition in eleven years and to have been reprinted a number of times during that period, it must be considered to have passed from the stage in which it may be readily criticized and to have attained a position in which it is only necessary that it should be up to date, since the profession has come to regard it as one of its standbys. This is certainly the case with Hirst's Obstetrics. It presents not only the views of obstetricians in general, but also represents the opinions and practice of the author, who for many years has been actively and busily engaged in the pursuit of this particular part of medical practice. The book is copiously illustrated, not only in black and white, but in colors. It is widely used as a text-book in medical schools, and constantly referred to by obstetricians, many of whom no doubt will hasten to obtain the new edition in order that they may have on their shelves the latest and one of the best books upon this department of medical practice.

THE PRINCIPLES OF HYGIENE. A Practical Manual for Students, Physicians, and Health Officers. By D. H. Bergey, A.M., M.D. Third Edition. Illustrated. The W. B. Saunders Co., Philadelphia, 1909. Price $3.00.

Dr. Bergey has long been known among health officers and bacteriologists as one of the most active and reliable men in this line of medical research. The title of his book describes the purposes for which he compiled it. It covers nearly 600 pages and is thorough and quite exhaustive. Although the general practitioner may not refer to it as frequently, because many of the technical details are outside of his needs, he will nevertheless find much information in its pages which will enable him to live a

more healthy life and to advise his patients who require sanitary suggestions. Its easy diction, large print, and clear descriptions make it an invaluable book for study and reference.

A Treatise on the Principles and Practice of Medicine. By Arthur R. Edwards, A.M., M.D. Second Edition, Thoroughly Revised. Lea & Febiger, Philadelphia, 1909.

The first edition of Dr. Edwards's work, which appeared about two years ago, was noteworthy because of the care with which he dealt with the subjects of etiology, pathology, and therapeutics. The present edition, of course, embodies all the advantages of the first. Chapters which are practically new have been included, dealing with cardiac arrhythmias and neuroses, with tropical splenomegaly, and various other tropical affections. Strong's work on Amebic Dysentery has received due consideration, as has the ophthalmo-reaction and other tuberculin tests. As the volume covers nearly 1300 pages, it is manifest that it is exhaustive and complete. We are glad to notice that the author condemns the coal-tar products in the treatment of pneumonia, but we cannot agree with him in thinking that strychnine is the best heart tonic in this disease, as we think that as a rule it should be reserved for emergencies, and that digitalis and other cardiac stimulants should be ordinarily employed when the heart needs support.

Surgical Diagnosis. By Edward Martin, M.D. 445 Engravings and 18 Plates. Lea & Febiger, Philadelphia, 1909.

The following text taken from the preface of Dr. Martin's work upon Surgical Diagnosis sufficiently explains the subjects which its author has attempted to cover:

"The simplicity and safety of surgical intervention are, as a rule, proportionate to timeliness in diagnosis. This, in turn, is usually dependent upon the judgment of the general practitioner, who is, as a rule, the first to see the patient, and should, therefore, be qualified to determine at the earliest moment when surgical treatment is required. The practitioner cannot be expected, however, to acquire such a knowledge of the probabilities deducible from general symptoms and of the variations from type as is necessary to establish the final diagnosis. This can be gained only by a conscious or subconscious grouping of the clinical features of many similar cases.

"The proof of the advantage of early diagnosis is afforded by the lessened mortality which is found to result from such diagnosis in every department of modern operative surgery. This is in part due to more perfected technique and more rational after-treatment, but mainly to the simplicity of earlier operation. To this element is also due, almost entirely, the larger percentage of radical cures.

"Partly from custom, but mainly because of examination requirements, it is the habit of teaching institutions to impress upon the minds of their students the symptom-complex of the completely developed disease. Such clear mental pictures are highly desirable from many points of view, but since action is often deferred until the picture is complete, they may work to the detriment of the patient. It too often happens that when the disease is so fully developed that the diagnosis can be made beyond doubt, the time for surgical intervention is past. If, for instance, a cancer of the breast is not recognized as possibly or probably such until the dense induration, skin adhesion, nodular lymphatic glands, and cachexia prove its nature, the only possible result accruing to the patient is the knowledge that she will have but little time to live and that she will suffer much. There are many affections, the neoplasms constituting the most conspicuous examples among these, in which an assured diagnosis other than by operative means is impossible at the time it is likely to be serviceable. It seems reasonable to hope that death or crippling or disfiguring deformity from surface or orificial malignant neoplasm may become even more rare than are now those monstrous growths which illustrate the text-books and frequent the clinics. This end will have been attained in part when it becomes generally recognized that the diagnosis of

malignancy should be formulated by wide removal and microscopic examination of any persistent outgrowth, infiltration, or ulceration which is not certainly benign. The gross deformity of Pott's disease, the crippling ankylosis of coxalgia, the lifelong pain and disability following bone and joint traumata too often represent sequelæ which could have been averted but for a too faithful adherence to the rule of formulating the diagnosis and directing the treatment only upon the basis of a complete symptomatology.

"It is therefore in the interest of early diagnosis in its relation to helpful and curative surgery that this book is written. Consequently, stress is laid mainly upon symptoms of major and deciding moment, or, when such are absent, upon the operative and laboratory means, by which a conjecture may be transformed into a probability or a certainty.

"In the section devoted to Laboratory Diagnosis, Dr. Warfield T. Longcope has presented, with a moderation highly creditable, a statement of the help that may be given the surgeon by those who work with the microscope, culture media, and test-tube.

"Dr. Henry K. Pancoast has shown in his chapter on the *x*-rays in Surgical Diagnosis both the value and the limitations of a method which, because of its efficiency, is now as essential to the surgeon in his examination of patients as is the anesthetic in his operations upon them. Dr. Pancoast's outline drawings of negatives in his possession constitute the most complete series of *x*-ray fracture pictures yet published.

"In the chapter devoted to Gynecological Diagnosis, Dr. Brooke M. Anspach has admirably described in detail the methods found most serviceable in his hospital and private practice.

"Dr. Theodore H. Weisenburg has based his chapter on the Diagnosis of Nervous Affections upon a wide experience with those diseases of the nervous system in which surgical intervention must be considered.

"Such merit and accuracy of statement as may be found in the section devoted to the Eye are due to the criticisms and suggestions of Dr. George E. de Schweinitz."

A Manual of Medical Treatment. In Two Volumes of 800 Pages each. By I. Burney Yeo, M.D., F.R.C.P., Raymond Crawfurd, A.M., M.D., F.R.C.P., and E. Farquhar Buzzard, M.A., M.D., F.R.C.P. William Wood & Co., New York, 1909.

The last edition of this book, exceedingly popular in England and quite popular in the United States, appeared seven years ago. The method of presenting the subject has not been changed, but the advances which have been made in serotherapy and related departments of therapeutics have necessitated a careful revision of the therapy of many infectious diseases. The present edition, as is evident from the title-page, has had the advantage of the coöperation of Dr. Crawfurd and Dr. Buzzard. The former has undertaken the revision of the sections on Digestive and Circulatory Diseases as well as those of the Liver and Kidneys, and Dr. Buzzard has revised the articles dealing with the therapy of the nervous system. We are glad to note in the therapy of typhoid fever that the depressing antipyretics are condemned or are limited to cases of hyperpyrexia. In regard to the use of hydrotherapy, we think that the authors do not sufficiently emphasize its value, for if there is one life-saving measure in typhoid fever above all others it is the use of hydrotherapy in some form. We have long taught that the cold bath in the sense of the cold plunge is unnecessary in many if not all cases, but contrariwise we believe that some modification of this method is essential in nearly every case. Too little emphasis is laid upon the necessity of applying friction with the application of cold water, and nothing is said about the employment of hot water in cases showing marked toxemia but little temperature. With the advice that a few ounces of ice-cold water may be injected into the rectum from time to time we cannot agree. So, too, we cannot agree with the advice to give phenacetine and quinine in small doses when the temperature is persistently high.

We have yet to see the case in which the proper application of cold was not efficacious in lowering the temperature if it is applied after the first week. During the first week it is, of course, notorious that hydrotherapy exercises little influence upon the temperature curve of this disease.

To the youthful practitioner the printing of formulæ at the end of each important chapter will prove distinctly useful. Another interesting content of the book is the publication of the list of well-known sanatoria in Europe to which patients suffering from tuberculosis and other maladies may be referred.

PHYSICAL DIAGNOSIS. By Richard C. Cabot, M.D. Fourth Edition, Revised and Enlarged. William Wood & Co., New York, 1909.

When four editions of a book upon Physical Diagnosis appear in four years, it is manifest that the author has succeeded in giving the profession what it needs and wants. In the preface to the fourth edition we are told that a good many changes have been made, the most important, however, being the consideration of the use of the free ear in auscultation, the discussion of bronchiectasis, and the difference between the two sides of the normal chest. Some of the pictures have been changed, which is advantageous, as the excellent quality of the text in previous editions has been marred by the wretched illustrations which accompanied it.

Dr. Cabot's first edition was characterized by the brevity and clearness of his statements, by the fearless exposition of his own views, and by the fact that many of these views are based upon his actual clinical experience. The same characteristics are notable in the present edition.

A MANUAL OF THERAPEUTICS. Parke, Davis & Co., Detroit, Michigan, 1909.

This little book of nearly 700 pages, although it refers especially to the products of the pharmaceutical and biological laboratories of Parke, Davis & Co., also contains an immense amount of valuable information along other lines. Its text deals with weights and measures, with percentage solution tables, thermometric equivalents, average weights and measurements of adult human organs, average weights and heights, respiration at various ages, facts regarding the temperature, the pulse at various ages, a dentition table, doses proportionate to age, the care of surgical instruments, an obstetric calendar, baths in common use, important abnormal constituents in urine, the urinary solids, a differential table of eruptive diseases, directions for modifying milk for infants, percentage compositions of various foods, percentage of nutriment in certain articles of food, and the time for their digestion. It also includes the quantity of alcohol in various liquors, substances excreted in milk, notes on feeding, diet tables, hypodermic medication, poisons and their antidotes, eruptions caused by drugs, important incompatibles, synonymous terms, medical Latin translated, leading remedies classified, therapeutic suggestions, and then a Materia Medica list describing drugs official and unofficial, and giving the formulas in which they are prepared (single or compound).

We understand that the book is distributed gratis to members of the medical profession who may apply for it.

A MANUAL OF DISEASES OF THE EYE FOR STUDENTS AND GENERAL PRACTITIONERS. By Charles H. May, M.D. Sixth Edition, Revised. William Wood & Co., New York, 1909.

We have welcomed the appearance of each succeeding edition of Dr. May's little book on Diseases of the Eye because he has succeeded, in a comparatively small space, in embodying most of the important facts which the general practitioner and the early student of ophthalmology really need. That the profession has joined with us in this welcome is evident by the fact that six editions have appeared in nine years. The only noteworthy additions to the present issue are upon the subjects of transillumination, the conjunctival tuberculin test, and cerebral decompression. We think that the author might have stated more emphatically his warning against the so-called ophthalmotuberculin reaction, the dangers of which are such that we think it should not be

resorted to except under very extraordinary circumstances. Of all the smaller books upon Ophthalmology we think that this one is certainly the best.

A System of Medicine by Many Writers. Edited by Sir Clifford Allbutt, K.C.B., M.A., M.D., LL.D., D.Sc., F.R.C.P., F.R.S., and Humphry Davy Rolleston, M.D., F.R.C.P. Macmillan & Co, New York and London, 1909.

The present volume of this well-known "System," which bids fair to become a classic in the literature of medicine, deals with the important subjects of diseases of the respiratory system and diseases of the blood. Its opening chapters take up the physical signs of diseases of the lungs and of the heart, and are written by Dr. Hector Mackenzie, while the subject of artificial aerotherapeutics is considered by Dr. C. Theodore Williams. Among the articles upon the diseases of the respiratory system we find that the authors have placed lobar pneumonia, which in most books dealing with the practice of medicine is now classed amongst the infectious diseases. So, too, we find pulmonary tuberculosis in this classification. In other words, the classification is one based upon organs rather than upon the causes of disease. Following the subject of pulmonary diseases, the diseases of the pleura are, of course, considered. A very important chapter is that upon intrapleural pressure by Dr. Samuel West. There are also three articles dealing with diseases of the mediastinum and one with disease of the thymus. Sir Clifford Allbutt himself writes the article on chlorosis in his usual inimitable fashion. Leukemia is considered by Professor Muir, and purpura by Sir Stephen Mackenzie, who unfortunately has passed away within the last few weeks.

CORRESPONDENCE.

LONDON LETTER.

BY DR. CHARLTON BRISCOE.

Without a doubt the big social gathering of the year in the medical world took place on July 20, when the foundation stone of the new buildings of King's College Hospital was laid by His Majesty the King.

His Majesty accompanied by the Queen drove down to Denmark Hill, where the new site has been chosen, in an open carriage drawn by four bays controlled by postillions, preceded by outriders in scarlet, and escorted by a detachment of the Second Life Guards. The Borough of Camberwell presented an address, to which the King graciously made a short reply. The streets through which the royal equipage passed were thronged with onlookers, and their majesties received a loud and hearty welcome as they drove along. A large marquee had been erected over the actual site of the ceremony, and as the royal party entered the band of the Life Guards played the National Anthem.

It was quite a pathetic sight to see one of the small patients, in charge of a nurse, come forward and present bouquets to the Queen and to Princess Victoria, who was also of the party. The Hon. F. W. D. Smith, M.P. for the Strand district and chairman of the Hospital, received their majesties, read an address of welcome, and then proceeded to detail the reasons for the removal and to give a description of the buildings which were about to be erected. The King then made reply in a short speech. Among other things, he recalled the fact that for many years Lord Lister had worked in the old hospital, and had there had the time and opportunity to perfect his work on antiseptics, thereby rendering an inestimable benefit to England and to all mankind. His majesty also referred to the fund associated with his name (the King's Hospital Fund); he had highly approved of this step, which lent considerable moral and financial support to the new scheme.

Following this speech came a short religious ceremony, conducted by the Bishop

of Southwark, after which the King spread cement on the base of the foundation stone with a presentation trowel, and then guided the stone into position as it was lowered by the workmen. His majesty afterward applied the square and level, and finally tapping it into position with an ebony mallet declared it "Well and truly laid in the name of the Father, the Son, and the Holy Ghost." Then followed the National Anthem and the benediction. The medical staff of the hospital and some others were then presented to their majesties. This closed a very interesting ceremony.

The new hospital will stand on ground covering 12 acres, and when completed will have accommodation for 600 in-patients. It will be the only hospital in the center of South London, where there is a poor population of more than 300,000. The nearest hospitals to the new site are Guy's and St. Thomas's, but these are only just on the south bank of the Thames, and about three miles from the new King's College Hospital. A long-felt want will thus be supplied, for an accident may occur in London on the south side of the water and there may be no hospital within six miles. The reason that influenced the committee in deciding to remove was that there was no work in the immediate neighborhood of the old hospital of an urgent character. There are also other institutions—Charing Cross, Westminster, Middlesex, and a little farther off St. Bartholomew's Hospitals—which are able to cope with the emergency work of the district. In former days, in the middle of last century, when the hospital was founded, there was a poor population numbering some 250,000 at the very gates of the institution. Owing, however, to the building of the Law Courts and the improvement in the property in its vicinity, and later to the improvements in the Strand and the building of large printing works between that thoroughfare and the Embankment, and later still to the formation of a broad street from Holborn to the Strand—Kingsway and Aldwych—the poorer tenements constituting Drury Lane and Clare Market have been swept away, and the inhabitants have found dwelling-places at a greater distance. This has in turn been rendered possible by the cheap fares which are charged to workmen on the trams and morning trains. As a result, as we have already stated, there are no poor left in the neighborhood which cannot be dealt with by the other voluntary hospitals. The new hospital will be fitted out with all the latest appliances, and the architect, Mr. Pite, has traveled long distances to see the latest in hospital construction. This building will not be completed probably for another two or three years, but when it is finished it will be a still further attraction to those who come from abroad to visit the metropolis.

We have received a notice to the effect that the Queen Alexandra Sanatorium at Davos will be opened early in the autumn. This is to be run on the lines of a national institution and will be devoted to the treatment of those who are unable to pay the tariff charged by hotels and other private sanatoria. At present there will only be accommodation for 54 patients, each in single rooms, but the full complement will be 120. This national sanatorium has developed from the Davos Invalids' Home, which was founded originally by the late Mrs. Lord. It is needless to say that room will be available for patients from the other side of the Atlantic, though it would be scarcely charitable to offer them a warm welcome.

The late Mr. Harry Barnato left the sum of £250,000 for the purpose of founding some charity, in the nature of a hospital or similar institution, in memory of his brother, Mr. Barney Barnato, and of his nephew, Mr. Woolf Joel. The trustees have had some difficulty in coming to a conclusion as to the best means of laying this sum out to the greatest advantage, but have finally decided to apply it to furthering the relief of those afflicted with cancer. To this end an institution will be built and endowed near the Middlesex Hospital and will be affiliated with it. There will, by this means, be a considerable saving in the initial expense for management and equipment, and the present foundation will be able to expand its usefulness. There is a band of workers

now at the Cancer Department of the Middlesex Hospital who are producing much good work, and this help will enable them to get more material, and we trust will free them from financial embarrassment, the bugbear of all scientific research work.

We mentioned in a former communication that an exhibition had been organized in Whitechapel by the National Association for the Prevention of Consumption. This has proved so successful that the promoters have seen fit to transfer the same to the Imperial International Exhibition at Shepherd's Bush. Lord Balfour performed the opening ceremony, and in the course of his speech remarked that the former exhibition had given them considerable encouragement, and the figures collected showed an attendance of 70,000. This is indeed something to be proud of, seeing that the district in which the exhibition was held is one of the poorest in London, and the inhabitants are not usually credited with any wish to open their windows or keep their bodies in even a comparative state of cleanliness.

We must congratulate the Colonial Office on the fact that they have shown signs of appreciating the importance of studying the relationship which exists between certain insects and the propagation of diseases among both men and beasts, and further, the similar relation between insects and plant life. The Earl of Crewe has appointed a scientific committee to study this question, and especially with its bearing on South Africa. Arrangements are being made to send trained entomologists to the east and west sides of tropical Africa, whose duties it will be to instruct residents and officials in the right way of studying these questions and of collecting and preserving specimens which may subsequently be distributed to various teaching centers and museums. Reports will be issued from time to time by this committee, and it is hoped that considerable progress will be made by this means in teaching those who go out what to avoid, as well as in the prevention of disease among those who are already there. Among those scientists whose names appear as on the committee are Colonel Alcock, Colonel Sir David Bruce, Sir John Macfadyen, Sir Patrick Manson, Dr. Nuttall, Professor Poulton, Dr. Sharp, Dr. Shipley, and Dr. Rose Bradford. Among these gentlemen there are so many Fellows of the Royal Society that their meetings will be like extraordinary meetings of that society.

THE MEDICAL TREATMENT OF MALIGNANT DISEASES.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: Your editorial in the GAZETTE for July has just come to hand, and I cannot resist the impulse to write you a line to express my great pleasure in finding that my sentiments meet with the approval of such an authority as this widely read journal. It has seemed to me for a long time that specialism is spoiling a good many family doctors; that too much attention is being paid by many of our most accomplished surgeons to the operative part of their work, to the detriment of their patients. More judgment is requisite for the after-treatment of many surgical cases than pertains to the operative work. Too often the patient receives scant attention after the operative stage has passed by, the very time when faithful, personal attention is most essential to the psychical comfort of the patient.

The older men recognize this fact far more than the youngsters can be expected to do. I can well remember that stage in my own career when I was more or less guilty of the same fault, and so can speak from experience. Psychotherapy has its place in the economy of the present day. The people demand it, will have it, and if they cannot get a decent, rational brand from the educated physician, they will flock to the Christian scientist, and be obliged to take the drivel they too often deal out to their followers.

With great respect and esteem, I remain,

Yours very truly,

GEORGE W. GAY.

BOSTON, MASS.